Altos R300

User's guide

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Place of Purchase: __________________________________

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Notices

FCC notice

This device has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This device generates, uses, and can radiate radio frequency energy, and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications.

However, there is no guarantee that interference will not occur in a particular installation. If this device does cause harmful interference to radio or television reception, which can be determined by turning the device off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the device and receiver
- Connect the device into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/television technician for help

Notice: Shield cables

All connections to other computing devices must be made using shielded cables to maintain compliance with FCC regulations.

Notice: Peripheral devices

Only peripherals (input/output devices, terminals, printers, etc.) certified to comply with the Class B limits may be attached to this equipment. Operation with noncertified peripherals is likely to result in interference to radio and TV reception.

Caution! Changes or modifications not expressly approved by the manufacturer could void the user's authority, which is granted by the Federal Communications Commission, to operate this system.

Use conditions

This part complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Notice: Canadian users

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Remarque à l'intention des utilisateurs canadiens

Cet appareil numérique de la classe B respected toutes les exigences du Règlement sur le matériel brouilleur du Canada.

Important safety information

Checking the power cords

Warning! To avoid electrical shock, do not attempt to modify or use the supplied AC power cord(s), if they are not the exact type required.

If a power cord(s) supplied is not compatible with the AC wall outlet in your region, get one that meets the following criteria:

- The power cord must be properly rated for the AC voltage in your region.
- The power cord plug cap must have an electrical current rating that is at least 125% of the electrical current rating of the product.
- The power cord plug cap that plugs into the wall socket-outlet must have a grounding-type male plug designed for use in your region.
- The power cord must have safety certifications for your region, and shall be marked with the certification markings.
- The power supply cord(s) is the main disconnect device to AC power. The socket outlet(s) shall be near the equipment and shall be readily accessible for disconnection.

Multiple power cords

Warning! To avoid electrical shock, disconnect all AC power cords before accessing system internals.

Earth grounded socket outlets

Warning! To avoid electrical shock, the system power cord(s) must be plugged into socket-outlet(s) that is/are provided with a suitable earth ground.

Precautionary reminders

- Power supply modules

  Power supply modules have double-pole/neutral fusing.
- Ventilation considerations

  The equipment rack must provide sufficient airflow to the front of the system to maintain proper cooling. The rack selected and the ventilation provided must be suitable to the environment in which the system will be used.
- Fans

  To avoid injury do not touch moving fan blades.
- Cooling and airflow

  For proper cooling and airflow, always install all access covers before turning on the system. Operating the system for longer than five minutes without the covers in place can cause overheating and damage to system components.
- Temperature limits

  The operating temperature of the system, when installed in the rack, must not go below 10°C (50°F) or rise above 35°C (95°F). Extreme fluctuations in temperature may cause a variety of system problems, and safety limits may be broken.
- Lifting and Moving

  Do not attempt to lift or move the system by the handles on the power supplies.
- System covers

  The system cover is an integral part of this product. If you need to open your system to install new components, always remember to reinstall the system cover before turning on the system.

Important safety instructions

Read these instructions carefully. Save these instructions for future reference.

1 Follow all warnings and instructions marked on the product.

2 Unplug this product from the wall outlet before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.

3 Do not use this product near water.

4 Do not place this product on an unstable cart, stand, or table. The product may fall, causing serious damage to the product.

5 Slots and openings in the housing and the back or bottom are provided for ventilation; to ensure reliable operation of the product and to protect it from overheating, these openings must not be blocked or covered. The openings should never be blocked by placing the product on a bed, sofa, rug, or other similar surface. This product should never be placed near or over a radiator or heat register, or in a built-in installation unless proper ventilation is provided.

6 This product should be operated from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your dealer or local power company.

7 Do not allow anything to rest on the power cord. Do not locate this product where persons will walk on the cord.

8 If an extension cord is used with this product, make sure that the total ampere rating of the equipment plugged into the extension cord does not exceed the extension cord ampere rating. Also, make sure that the total rating of all products plugged into the wall outlet does not exceed the fuse rating.

9 Never push objects of any kind into this product through cabinet slots as they may touch dangerous voltage points or short out parts that could result in a fire or electric shock. Never spill liquid of any kind on the product.

10 Do not attempt to service this product yourself, as opening or removing covers may expose you to dangerous voltage points or other risks. Refer all servicing to qualified service personnel.

11 Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:

    a When the power cord or plug is damaged or frayed

    b If liquid has been spilled into the product

    c If the product has been exposed to rain or water

- d If the product does not operate normally when the operating instructions are followed. Adjust only those controls that are covered by the operating instructions since improper adjustment of other controls may result in damage and will often require extensive work by a qualified service personnel to restore the product to normal condition.
- e If the product has been dropped or the cabinet has been damaged
- f If the product exhibits a distinct change in performance, indicating a need for service.

12 Replace the battery with the same type as the product's battery we recommend. Use of another battery may present a risk of fire or explosion. Refer battery replacement to a qualified service personnel.

13 **Warning!** Batteries may explode if not handled properly. Do not disassemble or dispose of them in fire. Keep them away from children and dispose of used batteries promptly.

14 Use only the proper type of power supply cord set (provided in your accessories box) for this unit.

Important installation instructions

Since Altos R300 is also considered to be rack-mountable, instructions addressing suitable installation of the equipment in a rack are required to be supplied by the equipment manufacturer. Through the use of simple statements in the installation instructions, the following general hazards shall be addressed. These potential hazards are considered common to most rack installations:

1. Elevated operating ambient temperature

   The details should be provided so that consideration shall be given to installing the equipment in an environment compatible with the manufacturer's maximum rated ambient temperature 35°C (95°F).

2. Reduced air flow

   Installation of the equipment in a rack shall be such that the amount of airflow required for safe operation of the equipment is not compromised.

3. Mechanical loading

   Mounting of the equipment in the rack shall be such that a hazardous condition is not achieved due to uneven mechanical loading.

4. Circuit overloading

   Consideration should be given to connection of the equipment to the supply circuit and the effect that overloading circuits may have on overcurrent protection and supply wiring. Appropriate consideration of the equipment nameplate rating should be used when addressing this concern.

5. Reliable earthing

   Reliable earthing of the rack mounted equipment should be maintained.

Laser compliance statement

The CD-ROM drive in this system is a laser product. The CD-ROM drive's classification label (shown below) is located on the drive.

CLASS 1 LASER PRODUCT
CAUTION: INVISIBLE LASER RADIATION WHEN OPEN. AVOID EXPOSURE TO BEAM.

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1 System overview

The Altos R300 is a 1U, high-density, rack-mountable single-processor system loaded with a host of new and innovative features. The system offers a new standard for flexible productivity ideal for local or wide area networks and multi-user server environments.

Overview

The Altos R300 system is a PCI bus based processor system built on an optimized baseboard. It comes with a single socket 478 processor slot utilizing an Intel® Pentium® 4 processor or Intel® Celeron processor with the Server Works GC-SL core logic chipset consisting of three distinct components: CMIC-SL, CIOBX2 and CSB5. The mainboard also integrates two Broadcom BCM 5703 10/100/1000 Base-T Gigabit Ethernet controllers solution for high performance network applications reducing power consumption.

For expandability, the system includes two 64-bit/100 MHz PCI-X bus slots and four DIMM slots that allow memory installation up to a maximum capacity of 4 GB.

For connectivity, the mainboard provides two USB (Universal Serial Bus) connectors, PS/2 interfaces for both mouse and keyboard, one UART serial port, one monitor port and two LAN ports.

For media storage, Altos R300 supports one slim-type CD-ROM drive, one slim-type floppy disk drive and a hard disk drive.

The system is fully compatible with Windows 2000 Server, SCO OpenServer 5.0.6, Unixware 7.1.1, NetWare 6, and Red Hat Linux 8.

Processors

The Intel® Pentium® 4 processor implements a new scalable system bus protocol. The system bus uses SST (Source-Synchronous Transfer) of addresses and data to improve performance for servers or workstations. With its on-die 512-KB level two (L2) cache implementing the Advanced Transfer Cache Architecture, the Intel® Pentium® 4 processor delivers higher performance than previous Pentium III processors while maintaining binary compatibility with all previous Intel® Architecture processors.

The mainboard supports FSB (front-side bus) speed up to 533 MHz.

Memory

The four DIMM sockets on board accept 256-, 512-MB or 1-GB DDR (Double Data Rate) SDRAM for a maximum memory capacity of up to 4 GB.

For data integrity, the default setting for the ECC (error correcting code) function of the memory system in BIOS is enabled.

Note: The mainboard supports PC2100/DDR-266 SDRAM DIMMs.

Refer to “Mainboard layout” on page 14 for the location of these DIMM slots on the mainboard.

System chipsets

Server Works chipset

The Server Works GC-SL(Grand Champion – Super Lite) chipset is specifically designed to meet the needs of high performance systems. It consists of the following components:

- CMIC-SL (north bridge) is responsible for communication between the processor, the memory bus, and the IMB (inter-module bus) bus. It runs directly to the processor bus at 133MHz and integrates the functions of main memory controller for DDR. IMB interface unit runs at 400MHz and connects to CIOBX2, and one narrow-version of IMB (Thin-IMB) connects to South Bridge CSB5.
- CIOBX2 (I/O bridge) is a peripheral chip that performs PCI bridging function between the IMB and the 2 PCI-X buses.
- CSB5 (south bridge) integrates the LPC interface that links super I/O functions like keyboard and mouse interface, floppy disk controller, advanced digital data separator, serial port, on-chip 12 mA AT bus drivers, one floppy direct drive support, and IPM (intelligent power management) support.

LAN subsystem

Integrated in your system are two Gigabit Ethernet controllers, BCM5703 10/100/1000BASE-T Ethernet LAN controllers. With sophisticated 64-bit PCI component and combination of triple-speed Ethernet transceiver, the LAN subsystem enables high-level command processing and multiple solutions for high-performance network applications.

Video subsystem

The ATI Rage XL harbors 2D and 3D display capabilities that bring life to multimedia and work applications. It also supports hardware DVD decoding. With remarkable color depth and high resolution of up to 1280 x 1024 it enhances every visual experience on your system.

The onboard ATI Rage XL chipset comes with 8 MB SDRAM and supports up to 1280 x 1024 display mode at true color.

Expansion slot

PCI bus

The mainboard has two 64-bit/100 MHz PCI-X bus slots one onboard and another on riser card.

Hardware management support

The mainboard supports a power management function that conforms to the power saving standards of the U.S. Environmental Protection Agency (EPA) Energy Star program. It also offers Plug-and-Play features which help save users from configuration problems, making the system more user-friendly.

Additional features include hardware support for ASM (Acer Server Manager). ASM performs server management tasks. It detects problems in the CPU thermal condition, CPU working voltage detection (±12V/±5V/3.3V/1.5V), and PCI bus utilization calculation. It also detects if the CPU fan or the chassis fan malfunctions.

Features summary

The system has the following major components:

- FC-PGA (Flip-Chip Pin Grid Array) 478 processor socket that supports :
  - Intel® Pentium® 4 processor up to 3.06 GHz (533 MHz system bus)
  - Intel® Celeron processor up to 2.2 GHz (400 MHz system bus) or above
- Server Works GC-SL chipset which includes the north, south and I/O bridge
- Onboard dual Broadcom BCM 5703 10/100/1000 Base-T Gigabit Ethernet controllers
- Four DIMM sockets that accept 256-, 512-MB and 1-GB DDR 266 SDRAM DIMMs for a maximum memory capacity of 4 GB
- Storage support for:
  - One slim-type CD-ROM drive
  - One slim-type floppy disk drive
- Two 64-bit/100 MHz PCI-X slots
- NS PC87414-ICK Super I/O chipset
- ATI Rage XL video chipset
- System clock/calendar with battery backup
- Auxiliary power connector for ATX power supply
- Advanced Server Management (ASM) controller chipsets
- External ports:
  - 2 USB ports (front)
  - PS/2-compatible keyboard port
  - PS/2-compatible mouse port
  - Serial port
  - 2 LAN ports (RJ-45)
  - Monitor/VGA port

Weight

The table below lists the weight of individual components used in the deployment of this system in third-party racks.

Item	Weight in kg	Weight in lbs
Fully configured system (with rack mount kit)	13 kg	28.6 lbs
Rack mount kit	3.1 kg	6.82 lbs
CPU and heat sink	0.6 kg	1.32 lbs
Hard disk drive	1kg	2.2 lbs
Power supply module	1.3 kg	2.86 lbs
Floppy disk drive	0.16 kg	0.35 lbs
CD-ROM drive	0.3 kg	0.66 lbs
PCI card	0.04 ~ 0.4 kg	0.09 ~ 0.88 lbs

Power consumption

The server power supply is rated for a maximum 200W DC output. Maximum input AC power consumption is approximately 307W.

- Using 110V AC power, a fully loaded system can consume up to 2.944A
- Using 200V AC power, a fully loaded system can consume up to 1.619A

Deployment of ultra-dense 1U servers represent a significant power requirement. A simple formula to calculate server power requirements for an installation is:

(Number of servers) x (307W) = maximum power requirements for servers

Thermal dissipation

Altos R300 has the following cooling systems:

- Three 4-cm CPU fans
- One rear chassis fan

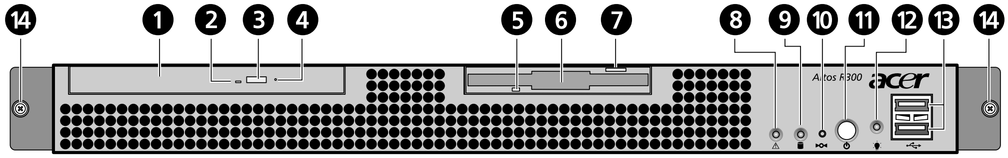
A fully configured Altos R300 server under maximum workload can produce approximately 900 BTU/hr. Air temperature measurements around the system may vary as much as 25°C (45°F) from front to back. Deployment of multiple ultra-dense servers will produce a significant amount of heat. For example, 42 server under maximum workload can generate as much as 37,820 BTU/hr.

2 System tour

This chapter discusses the features and components of your system. Instructions on how to set up your system and connect basic and optional peripherals are also explained.

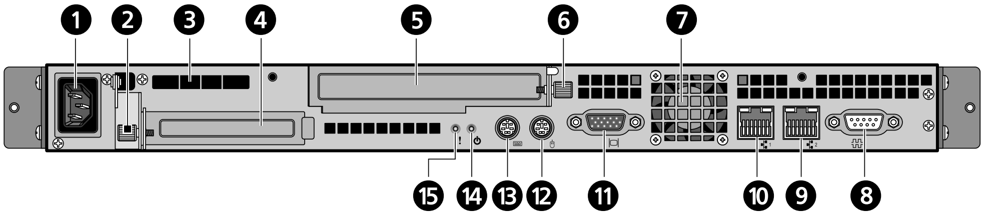
External and internal structure

Front panel



No.	Icon	Description
1		CD-ROM drive
2		CD-ROM drive indicator
3		CD-ROM drive eject button
4		CD-ROM drive emergency eject hole
5		Floppy disk drive indicator
6		Floppy disk drive
7		Floppy disk drive eject button
8	⚠	System event indicator
9	⛁	Hard disk activity indicator
10	►○◄	Reset button
11	⏻	Power button
12	💡	Power indicator
13	●⭢	USB ports (2 ports)
14		Rack mount bracket thumbscrew

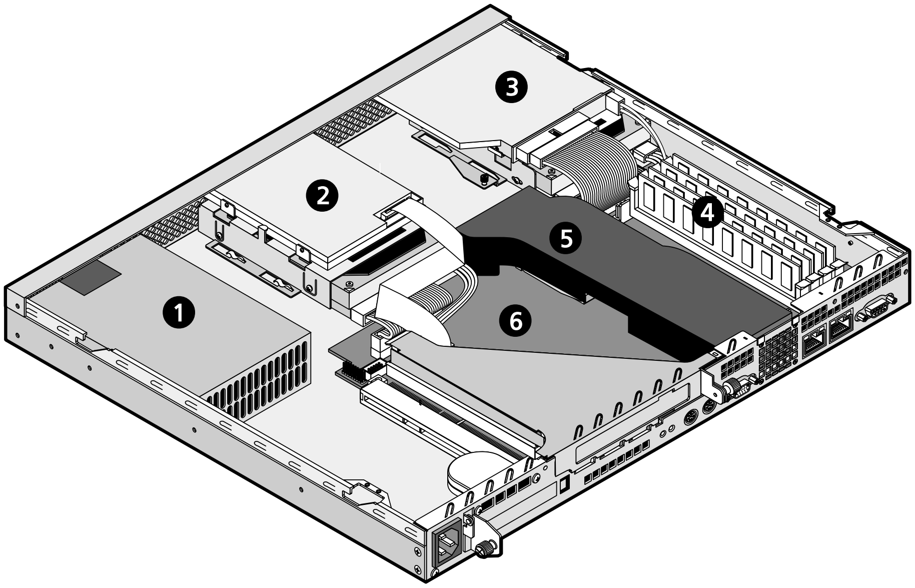
Rear panel



No.	Icon	Color	Description
1			Power cable socket
2			Add-on low profile PCI card bracket thumbscrew
3			Fan blower
4			Add-on low profile PCI card bracket
5			Add-on PCI card bracket
6			Add-on PCI card bracket thumbscrew
7			Rear system fan
8	IOIOI	Teal or turquiose	Serial port
9	🖧 1	Black	Gigabit LAN 1 port
10	🖧 2	Black	Gigabit LAN 2 port
11	▭	Blue	Monitor/VGA port
12	🖱	Green	PS/2 mouse port
13	⌨	Purple	PS/2 keyboard port

No.	Icon	Color	Description
14	💡		Power supply indicator
15	!		System event indicator

Internal components

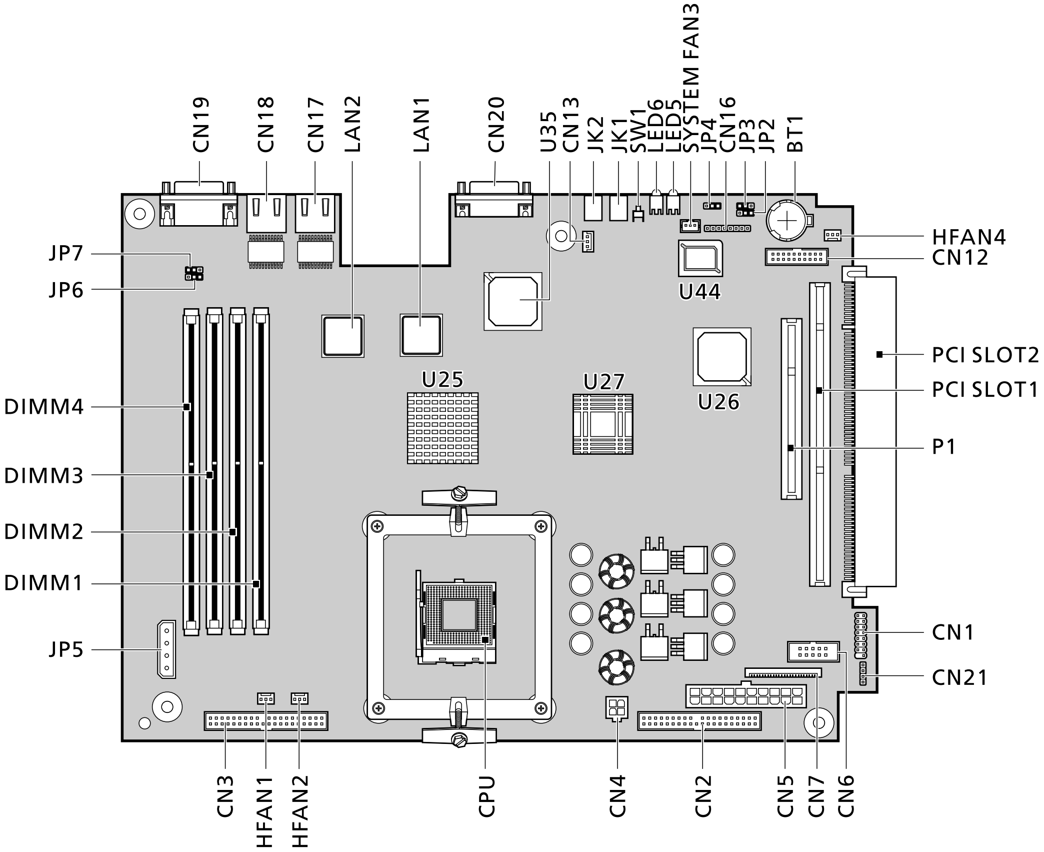


No.	Item
1	Power supply
2	Slim type floppy disk drive (top) Hard disk drive (bottom)
3	Slim type CD-ROM drive (top) Hard disk drive (bottom)
4	DIMM sockets
5	Air baffle
6	Mainboard

System board

Mainboard layout

The mainboard becomes accessible once you open the system. It should look like the figure shown below.


CN19
CN18
CN17
LAN2
LAN1
CN20
U35
CN13
JK2
JK1
SW1
LED6
LED5
SYSTEM FAN3
JP4
CN16
JP3
JP2
BT1
JP7
JP6
HFAN4
CN12
U44
PCI SLOT2
PCI SLOT1
P1
U25
U27
U26
DIMM4
DIMM3
DIMM2
DIMM1
JP5
CN1
CN21
CN3
HFAN1
HFAN2
CPU
CN4
CN2
CN5
CN7
CN6

Item	Description
BT1	Battery
CN1	LED board connector
CN2	Secondary IDE connector
CN3	Primary IDE connector
CN4	PSU (power supply unit) 12V input connector

Item	Description
CN5	24-pin ATX power supply connector
CN6	USB connector
CN7	Slim-type FDD connector
CN12	ARMC (Altos Remote Management Card) connector
CN13	Wake on LAN connector
CN16	Lattice chip (not functioning)
CN17	Gigabit LAN port(RJ-45)
CN18	Gigabit LAN port (RJ-45)
CN19	Serial port
CN20	Monitor/VGA port
CN21	SCSI LED connector
CPU	CPU socket
DIMM1 to DIMM4	DIMM slots
HFAN1	CPU cooling fan 1 connector
HFAN2	CPU cooling fan 2 connector
HFAN4	3-pin fan connector
JK1	PS/2 keyboard port
JK2	PS/2 mouse port
JP2	CMOS clear jumper
JP3	ASR (automatic server restart) disable jumper
JP4	Boot block jumper
JP5	HDD power connector

Item	Description
JP6	IMB training jumper
JP7	I2C bus connector
LAN1 and LAN2	Broadcom BCM5703 Gigabit chips
LED5	Event LED
LED6	Power LED
P1	PCI slot (for debug card purpose only)
PCI slot 1 and PCI slot 2	64-bit/100 MHz PCI-X slots (3.3v)
SW1	NMI (non-maskable interrupt) switch
SYSTEM FAN3	3-pin fan connector
U25	CMIC-SL (north bridge)
U26	CSB5 (south bridge)
U27	CIOBX2 (I/O bridge)
U35	ATI Rage XL VGA chipset
U44	Flash BIOS

Disk drives

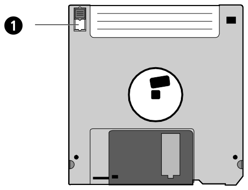
Your system comes with the following disk drives:

Floppy disk drive

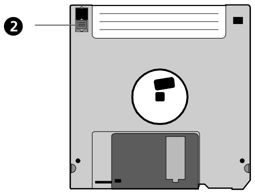
Your system’s 3.5-inch slim-type floppy disk drive can handle 1.44- and 2.88-MB capacity diskettes.

Floppy diskettes are compact, lightweight, and easy to carry around. Here are some tips on how to take care of your diskettes:

- Always make backup copies of the diskettes that contain important data or program files.
- Keep diskettes away from magnetic fields and sources of heat.
- Avoid removing a diskette from the floppy drive when the drive activity indicator is on.
- Write-protect your diskettes to prevent accidental erasure. To do this, slide the write-protect tab to the write-protect position (1).



Sliding the write-protect tab to the not-write-protect position (2) will allow you to store and modify data in your diskettes.



- When you put a label on a 3.5-inch diskette, make sure that the label is properly attached (flat on the surface) and within the labeling area (area with a slight surface depression) on the diskette. An improperly attached label may cause a diskette to get stuck in the floppy drive when you are inserting or removing it.

CD-ROM drive

Your system comes with a slim-type CD-ROM drive. This drive is located on the front panel of your system. The CD-ROM drive is used to access data on compact discs (CDs).

CDs, like diskettes, are also compact, lightweight, and easy to carry around. However, they are more delicate than diskettes and must be handled with extra care.

To insert a CD into your system's CD-ROM drive:

1 Gently press the eject button located on the front panel.

2 When the disc tray slides open, insert the CD. Make sure that the label or title side of the disc is facing upward.

Caution! Hold the disc by the edges to avoid leaving smudges or fingerprints.

3 Press the eject button again to close the tray.

To eject the CD tray

- To eject the CD tray when the system is turned on, press the CD-ROM drive eject button
- To eject the CD tray when the system is turned off, insert the tip of a pen or a paperclip into the emergency eject hole to pop out the tray.

To take care of your CDs:

- Keep your discs in a disk case when not in use to avoid scratches or other damage. Any kind of dirt or damage can affect the data on the disc, impair the disc lens reader on the CD-ROM drive, or stop the system from successfully reading the disc.
- When handling discs, always hold them by the edges to avoid smudges or fingerprints.
- When cleaning discs, use a clean, dust-free cloth and wipe in a straight line from the center to the edge. Do not wipe in a circular motion.

- Clean your CD-ROM drive periodically. You may refer to a cleaning kit for instructions. Cleaning kits can be purchased in any computer or electronics shop.

Hard disk drive

Your system can support two high-capacity Enhanced-IDE (E-IDE) hard disk.

For instructions on how to upgrade or replace your hard disk, refer to page 41.

Preinstallation requirements

Selecting a site

Before unpacking and installing the system, select a suitable site for the system for maximum efficiency. Consider the following factors when choosing a site for the system:

- Near a grounded power outlet
- Clean and dust-free
- Sturdy surface free from vibration
- Well-ventilated and away from sources of heat
- Secluded from electromagnetic fields produced by electrical devices such as air conditioners, radio and TV transmitters, etc.

Checking the package contents

Check the following items from the package:

- Altos R300 system
- Altos R300 User's guide
- Acer EasyBUILD™
- Altos R300 accessory box

If any of the above items are damaged or missing, contact your dealer immediately.

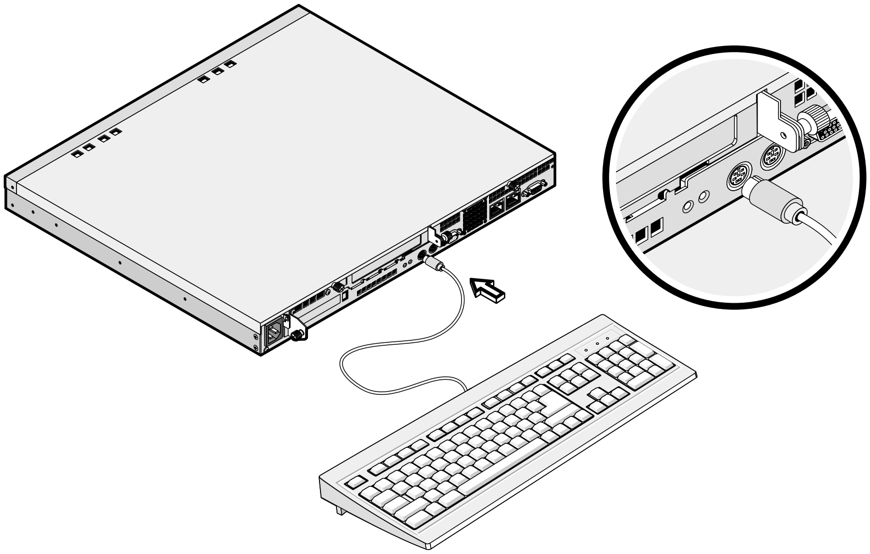
Save the boxes and packing materials for future use.

Basic connections

The system unit, PS/2 keyboard, PS/2 mouse, and monitor constitute the basic system. Before connecting any other peripherals, connect these peripherals first to test if the system is running properly.

Connecting the PS/2 keyboard

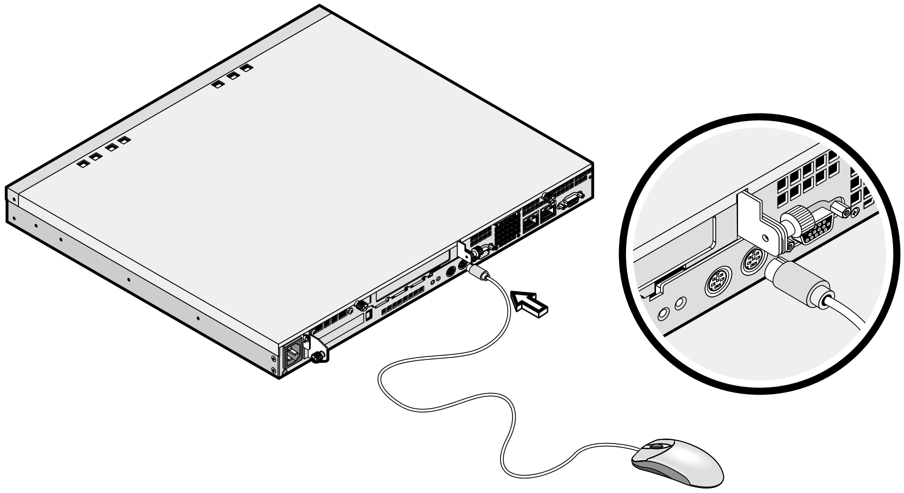
Plug the PS/2 keyboard cable into the PS/2 keyboard port ⌨ (purple port) located on the rear panel of your system.



Note: If you are using a USB keyboard, plug the keyboard cable into either of the USB ports located on the front panel of your system.

Connecting the PS/2 mouse

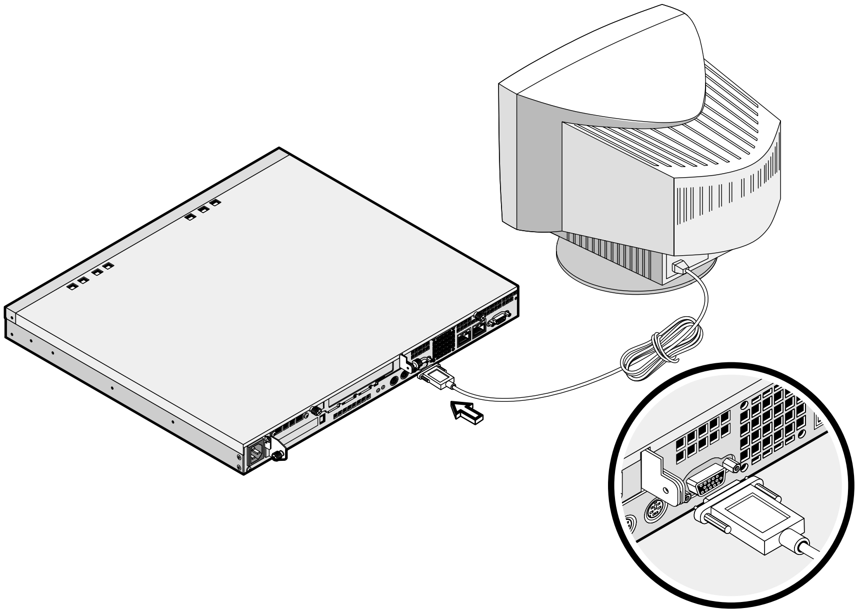
Plug the PS/2 mouse cable into the PS/2 mouse port 🖱 (green port) located on the rear panel of your system.



Note: If you are using a USB mouse, plug the mouse cable into either of the USB ports located on the front panel of your system.

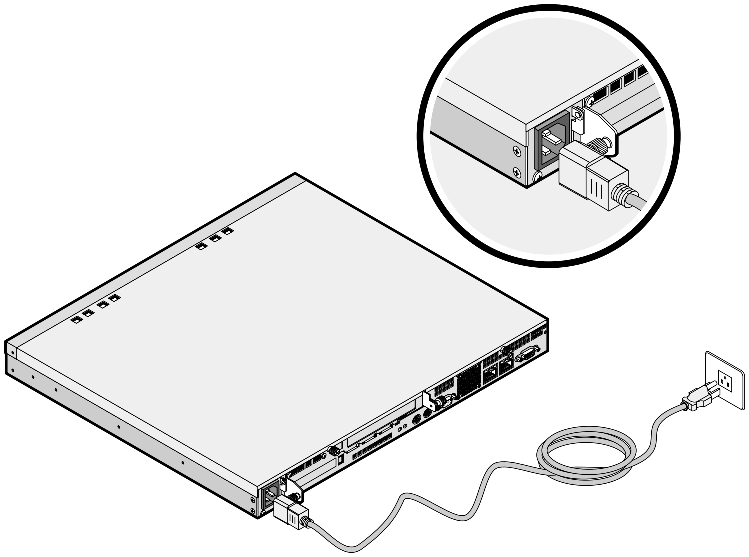
Connecting the VGA monitor

To connect the VGA monitor, simply plug the monitor cable into the monitor/VGA port ▢ (blue port) located on the rear panel of your system.



Connecting the power cable

Plug the power cable into the power cable socket located on the rear panel of your system. Then plug the other end of the power cable into a power outlet.



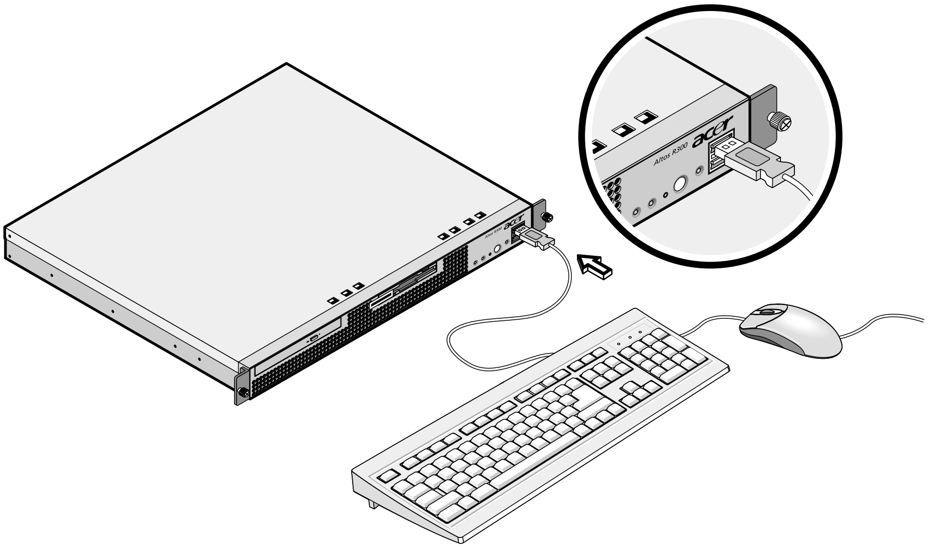
Connecting option

USB devices

Universal Serial Bus (USB) is a serial bus design that is capable of cascading low-/medium-speed peripherals (less than 12 Mbps) such as a keyboard, mouse, joystick, scanner, printer and modem. With USB, complex cable connections can be eliminated.

Your system comes with two USB ports located on the front panel. These ports allow you to connect additional serial devices to your system without using up its system resources.

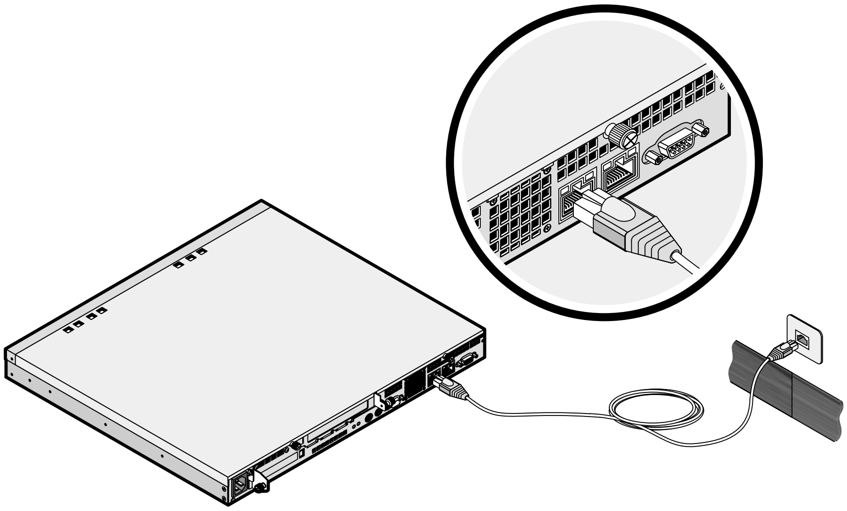
To connect a USB device, simply plug the device cable into either USB port (black port) located on the front panel of your system.



Note: Some USB devices have a built-in USB port which allows you to daisy-chain other devices.

Network

You can connect your system to a Local Area Network (LAN) using a network cable. To do so, simply plug the network cable into either of the two network ports 🖧 (black port) located on the rear panel of your system.



Note: Consult your operating system manual for information on how to configure your network.

Turning on your system

After making sure that you have set up the system properly and connected all the required cables, you can now power on your system.

To power on the system, press the power button on the front panel. The system starts up and displays a welcome message. After that, a series of power-on self-test (POST) messages appears. The POST messages indicate if the system is running properly or not.

Note: If the system does not turn on or boot after pressing the power button, go to the next section for the possible causes of the boot failure.

Aside from the POST messages, you can determine if the system is in good condition by checking if the following occurred:

- Power indicator on the front panel lights up (green)
- Num Lock, Caps Lock, and Scroll Lock indicators on the keyboard light up

Power-on problems

If the system does not boot after you have applied power, check the following factors that might have caused the boot failure.

- The external power cable may be loosely connected.

  Check the power cable connection from the power source to the power cable socket on the rear panel. Make sure that the cable is properly connected to the power source and to the power cable socket.
- No power comes from the grounded power outlet.

  Have an electrician check your power outlet.

- Loose or improperly connected internal power cables.

  Check the internal cable connections. If you are not confident to perform this step, ask a qualified technician to assist you.

Warning! Make sure all power cords are disconnected from the electrical outlet before performing this task.

Note: If you have gone through the preceding actions and the system still fails to boot, ask your dealer or a qualified technician for assistance.

Turning off your system

To turn off your system in Windows, on the Windows taskbar click on the **Start** button, select **Shut down** from the drop-down window then click on **OK**. You can then turn off all peripherals connected to your system.

If you cannot shut down your system, press the power button for at least four seconds. Quickly pressing the button may put the system in a Suspend mode only.

Note: For other operating systems, refer to their documentation.

3 Upgrading your system

This chapter contains basic information about your system board that you will find helpful when performing the instructions of the upgrade process which are also discussed in this chapter.

Installation precautions

Before you install any system component, we recommend that you read the following sections. These sections contain important ESD precautions along with preinstallation and post-installation instructions.

ESD precautions

Electrostatic discharge (ESD) can damage your processor, disk drives, expansion boards, and other components. Always observe the following precautions before you install a system component:

1. Do not remove a component from its protective packaging until you are ready to install it.
2. Wear a wrist grounding strap and attach it to a metal part of the system before handling components. If a wrist strap is not available, maintain contact with the system throughout any procedure requiring ESD protection.

Preinstallation instructions

Always observe the following before you install any component:

1. Turn off your system and all the peripherals connected to it.
2. Unplug all cables from the power outlets.
3. Open your system according to the instructions on page 33.
4. Follow the ESD precautions described above when handling a system component.
5. Remove any expansion board(s) or peripheral(s) that block access to the DIMM socket or other component connector.

See the following sections for specific installation instructions on the component you wish to install.

Warning! Failure to properly turn off the system before you start installing components may cause serious damage.
Do not attempt the procedures described in the following sections unless you are a qualified service technician.

Post-installation instructions

Observe the following after installing a system component:

1. See to it that all components are installed according to the described step-by-step instructions.
2. Replace any expansion board(s) or peripheral(s) that you have previously removed.
3. Connect the necessary cables.
4. Replace the system cover.
5. Turn on the system.

Opening your system

Caution! Before you proceed, make sure that you have turned off your system and all peripherals connected to it. Read the "Preinstallation instructions" on page 33.

Warning! DO NOT attempt the procedures in the following sections unless you are confident of your capability to perform them. Otherwise, ask a service technician for assistance.

Removing the system cover

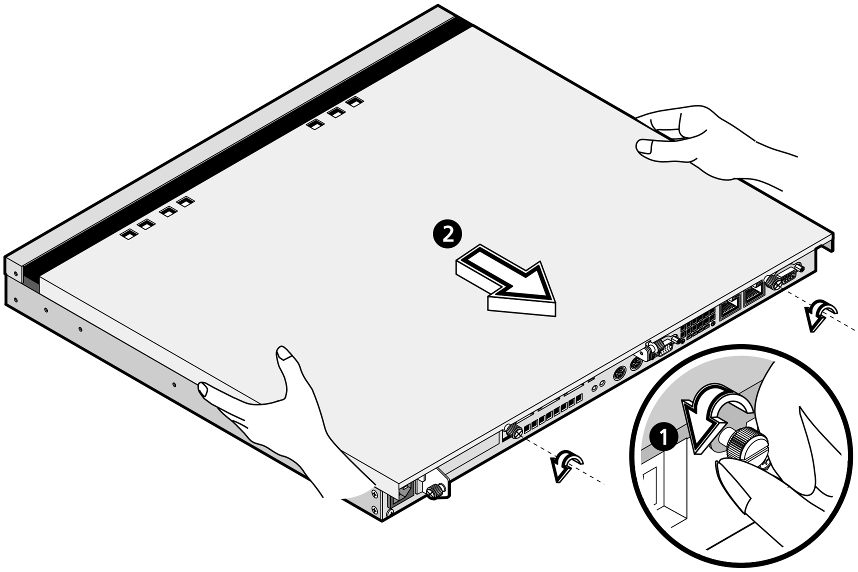
You need to open your system before you can install additional components.

1 Turn off the power to the system unit and unplug all cables.

2 Place your system unit on a flat, steady surface.

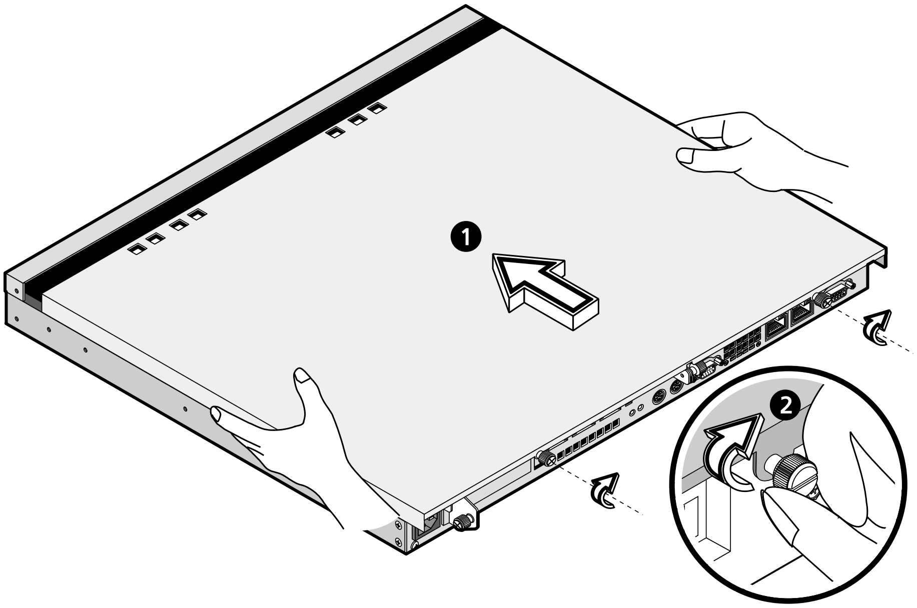
3 Turn the thumbscrews counterclockwise to release the cover (1).

Hold the cover with both hands and gently pull back the cover to detach it from the housing (2).



Replacing the system cover

Align the cover to the housing frame and then push it back in to slide it back into place (1). Turn the thumbscrews clockwise to secure the cover (2).



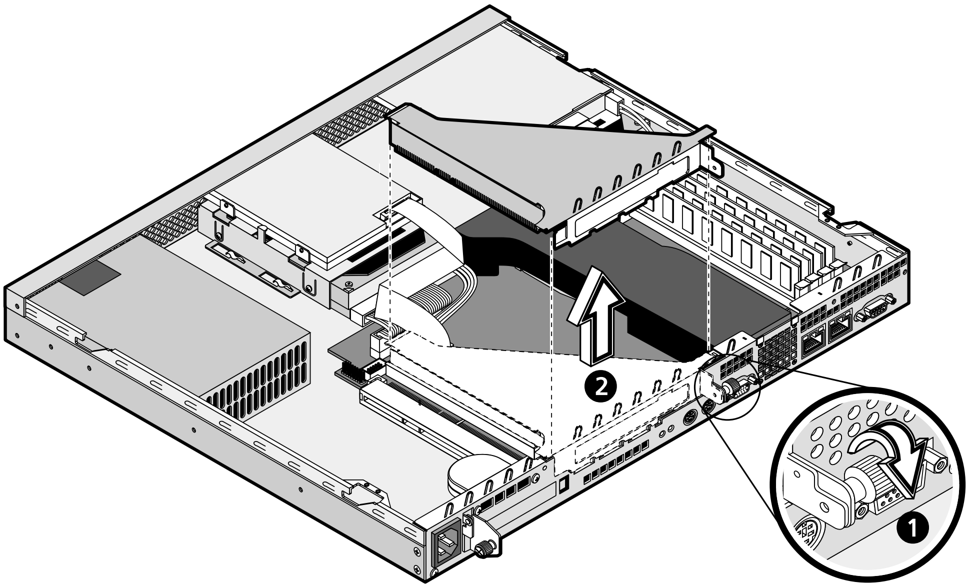
Installing an expansion card

This section explains how to install an expansion card. The onboard expansion slots support PCI (Peripheral Component Interconnect) cards.

Note: The BIOS setup automatically detects and assigns resources to the new device (applicable only to Plug-and-Play expansion cards).

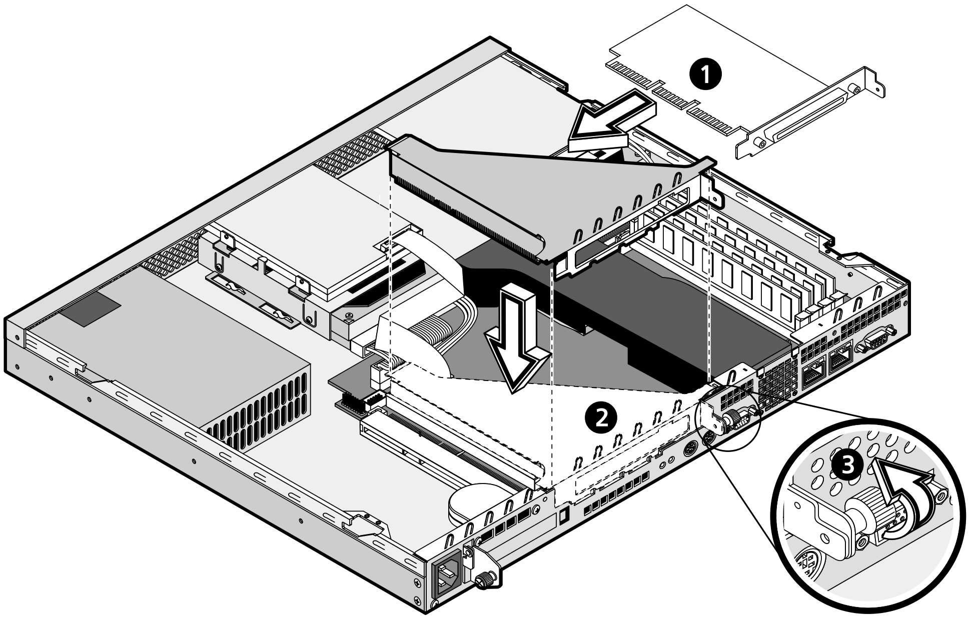
To install a PCI card on PCI slot 1

1. Remove the system cover. See "Removing the system cover" on page 35 for more information.
2. Loosen the thumbscrew on the add-on card metal bracket (1), then lift up the metal bracket from the housing (2).



3. Remove the expansion slot bracket on one side of the metal bracket.

4 Align then insert the PCI card into the slot bracket (1) , then reinstall the metal bracket onto the housing (2). Secure the metal bracket with the thumbscrew (3).



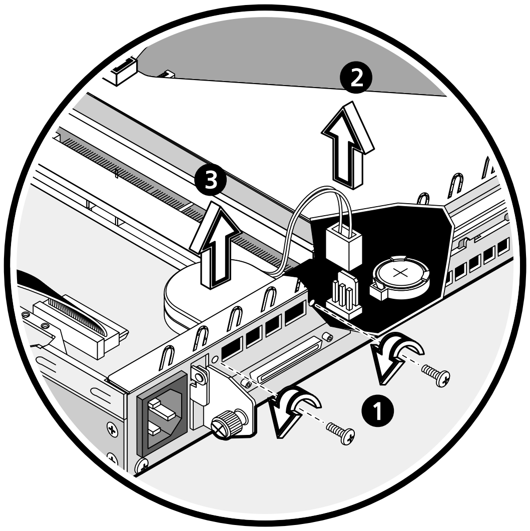
5 Replace the system cover.

To install a PCI-SCSI card on PCI slot 2

1 Remove the system cover. See “Removing the system cover” on page 35 for more information.

2 Remove the two screws that hold the fan blower to the housing (1).

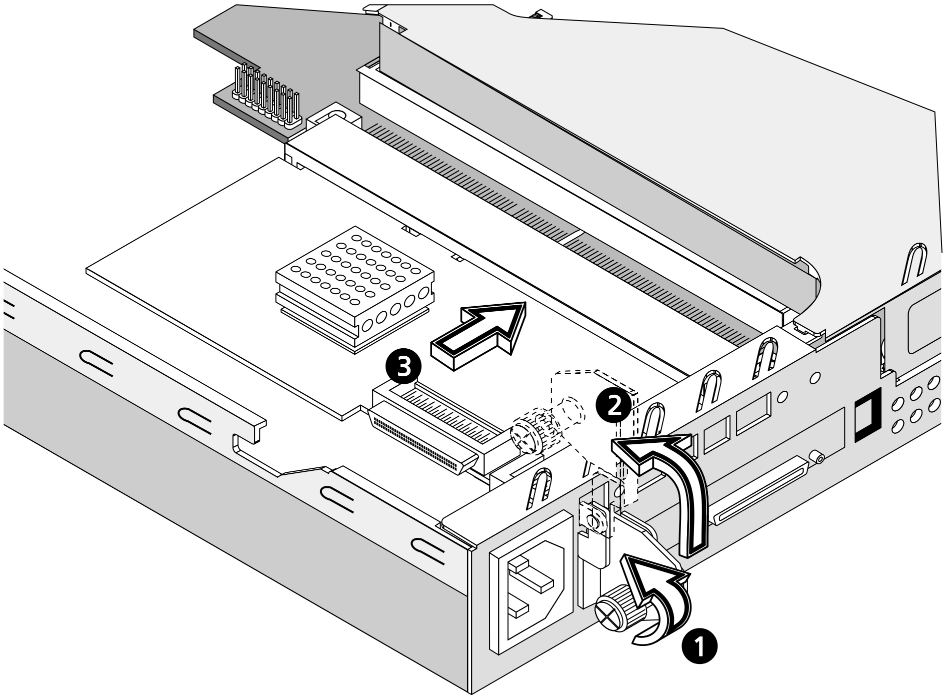
Disconnect the cable to the fan blower (2) then lift up the fan blower from the housing (3).



3 Loosen the thumbscrew on the add-on low profile PCI card metal bracket (1). Flip the latch up to secure the metal bracket to the system housing (2).

Remove the expansion slot bracket.

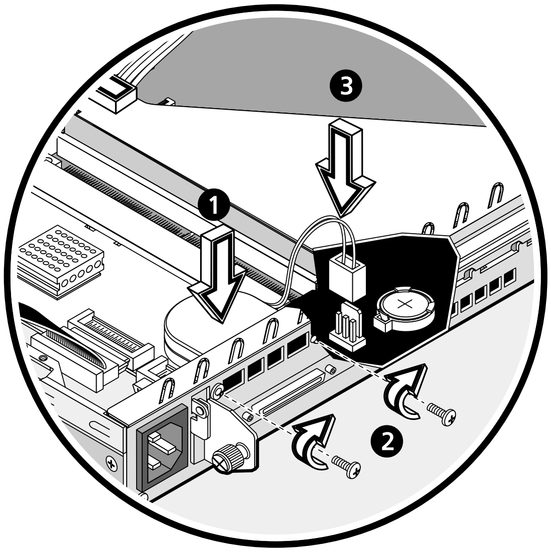
Slide the PCI-SCSI card under the fan then insert the card into the slot bracket (3).



4 Secure the metal bracket with the thumbscrew.

5 Reinstall the fan blower to the housing (1).

Secure it with the screws removed earlier (2) then connect the fan blower cable (3).



6 Replace the system cover.

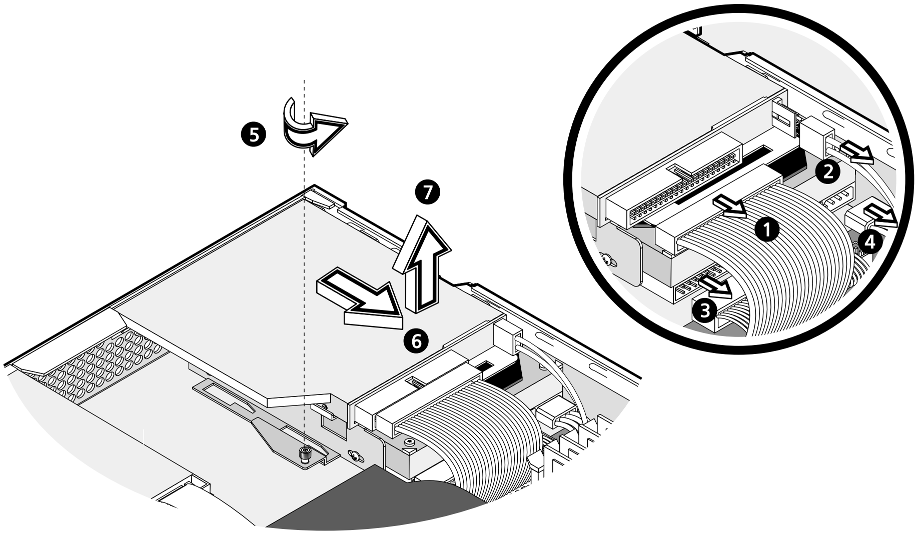
Removing or installing the hard disk drive

To remove or install a hard disk drive:

1. Remove the system cover. See “Removing the system cover” on page 35 for more information.
2. The system has two hard disk drives located below the CD-ROM and floppy drive. Refer to the procedures described below to remove a hard disk drive.

   To remove the hard disk drive under the CD-ROM drive:

   a. Disconnect all cables connected to the CD-ROM and hard disk (1, 2, 3, 4).
   b. Remove the screw that holds the CD-ROM and hard disk assembly to the housing (5).
   c. Slide (6) then lift up the assembly from the system housing (7).



To remove the hard disk drive under the floppy disk drive:

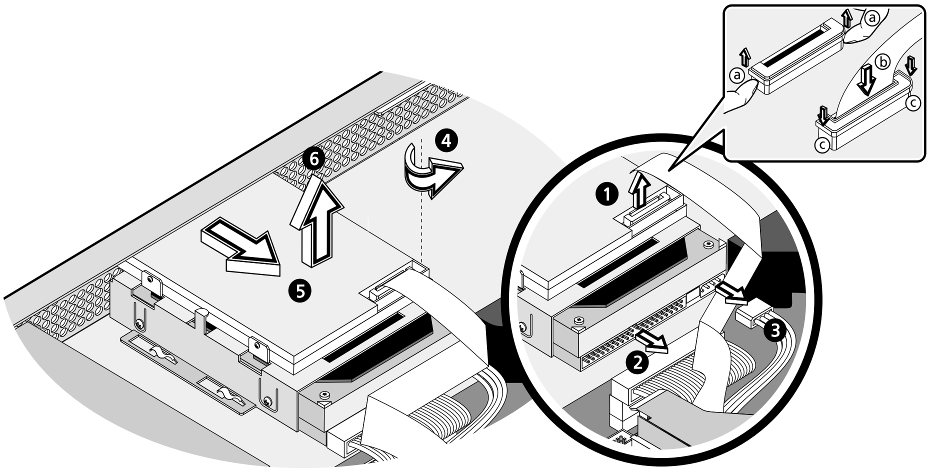
a Disconnect the diskette drive (1), hard disk (2) and power cable (3) connected to the floppy drive and hard disk.

Note: To remove the floppy drive cable, use your fingers or a flat screw driver to gently lift the cable retainer on the connector (a) then lift the cable up as shown inset on the figure below.

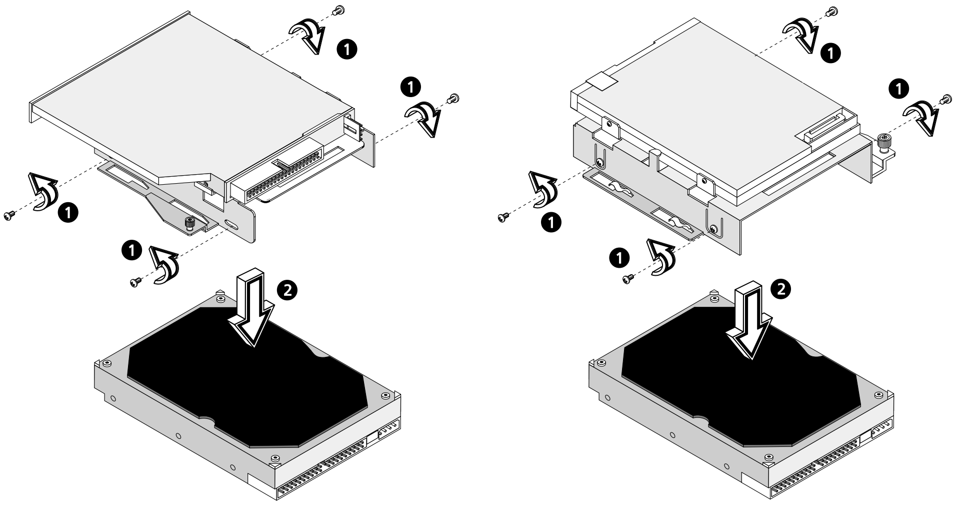
Attach the cable retainer to the connector and push it in to connect the floppy disk drive cable (b,c).

b Remove the screw that holds the diskette drive and hard disk assembly to the housing (4).

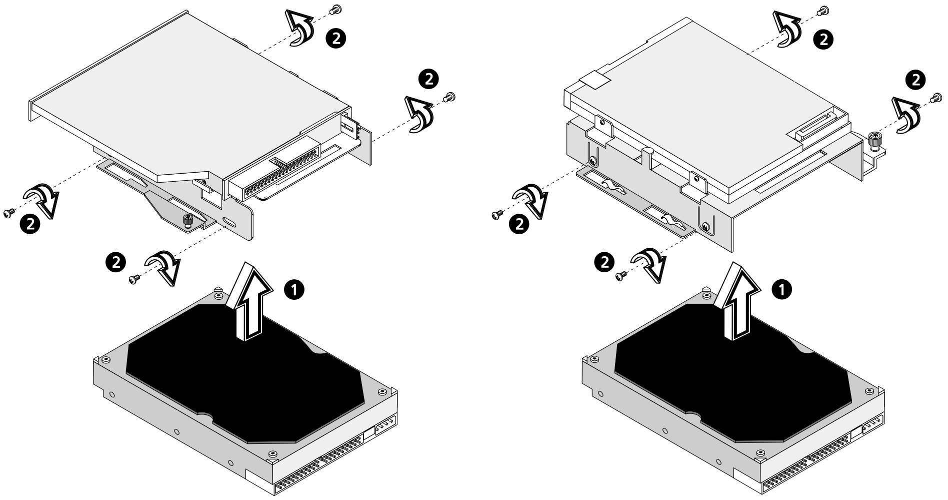
c Slide (5) then lift up the assembly from the system housing (6).



3 Remove the four screws that hold the hard disk to the disk frame (1) and pull out the hard disk drive (2). Keep the screws for later use.



4 Install a new hard disk drive (1) and secure it with the four screws removed earlier (2).

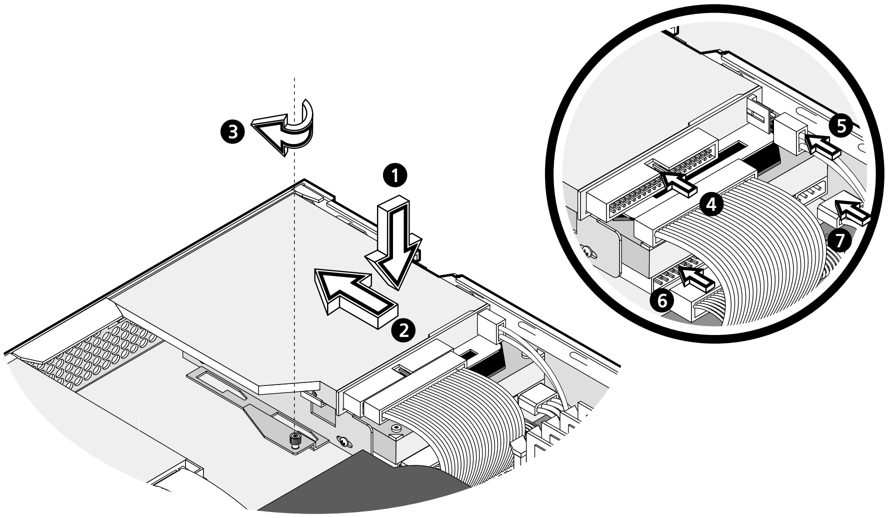


5 After installing the new hard disk drive, reinstall it back in its proper location.

To install the CD-ROM and hard disk drive assembly:

a Slide the CD-ROM and hard disk drive assembly into the housing (1, 2) then secure it with the screw removed earlier (3).

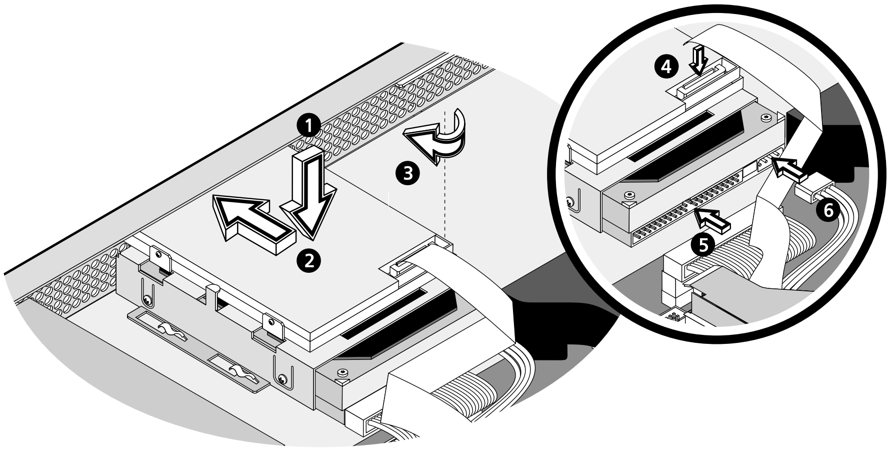
b Connect all cables (4, 5, 6, 7).



To install a floppy disk drive and hard disk drive assembly:

a Slide the floppy disk drive and hard disk assembly into the housing (1, 2) then secure it with the screw removed earlier (3).

b Connect all cables (4, 5, 6).



Note: Make sure that the other ends of the disk cables are securely connected to their corresponding connectors on the mainboard.

6 Replace the system cover.

Installing SCSI hard disks

Note: Before you install a SCSI hard disk in your system, you need to install a SCSI controller card. The SCSI controller card shown in the illustration below is for your reference only. The actual system may not be bundled with a SCSI adapter card.
For more instructions on how to install a SCSI card to your system, refer to page 39.

To install two SCSI hard disks:

1. Remove the system cover. See "Removing the system cover" on page 35 for more information.
2. Configure the jumper settings, SCSI ID and terminators.

   Note: Refer to the SCSI hard disk documentation for more information.

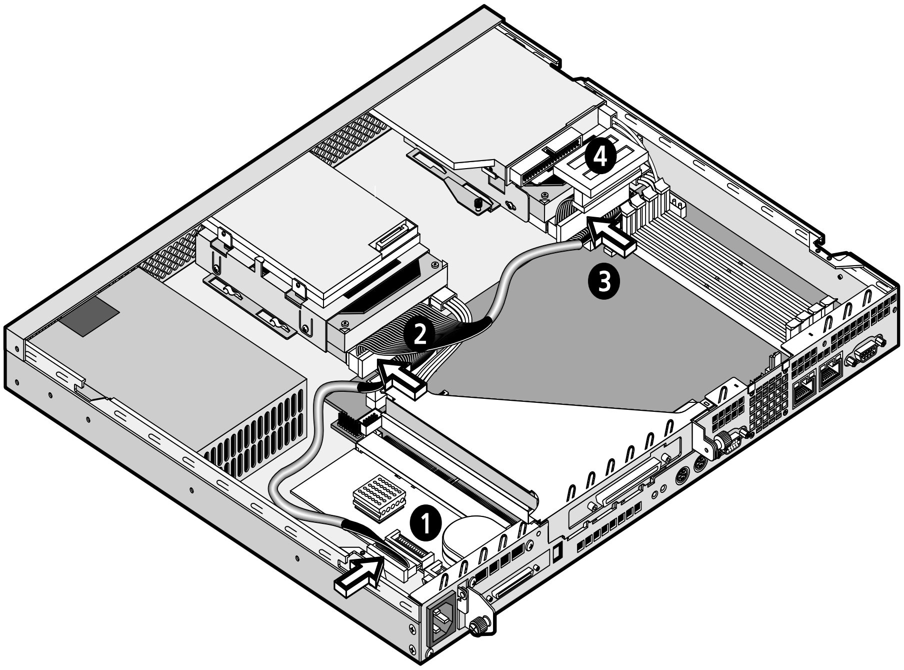
3. Install the SCSI hard disks to your system following the instruction on page 43.
4. Locate the SCSI controller card on the mainboard.
5. Remove the fan blower. See page 39 step 2 for more information.

   Note: If you want to connect more than one SCSI hard disks in a daisy-chain fashion, you may need a SCSI terminator. SCSI terminators are usually installed at the end of the SCSI cables to let fast signals be passed without distortion.

6. Plug one end of the SCSI cable to the SCSI controller card connector (1).

   Route the cable along the side of the mainboard and air baffle. Connect the second SCSI cable to the first SCSI hard disk connector (2).

   Connect the last SCSI cable to the SCSI hard disk connector (3) then attach a terminator to the end of the SCSI cable (4).



7 Reinstall the fan blower.

8 Replace the system cover.

Removing and installing the CPU

The mainboard supports Intel® Pentium® 4 processor running at 533 MHz to 3.06 GHz or Intel® Celeron processor running at 400 MHz to 2.2 GHz and future generations of Celeron CPUs.

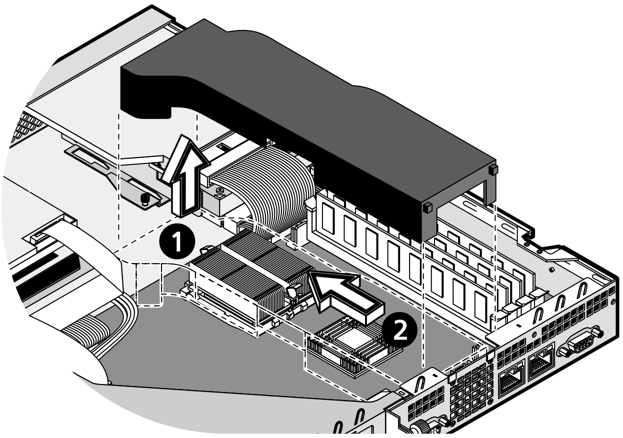
Caution! Always observe the ESD precautions when installing or removing a system component. Refer to the “Installation precautions” on page 33.

Removing the CPU

Follow these steps to remove a CPU:

1 Remove the system cover. See page 35 for more detailed instructions.

2 Remove the air baffle by lifting it up (1) then sliding it to the direction shown below (2).



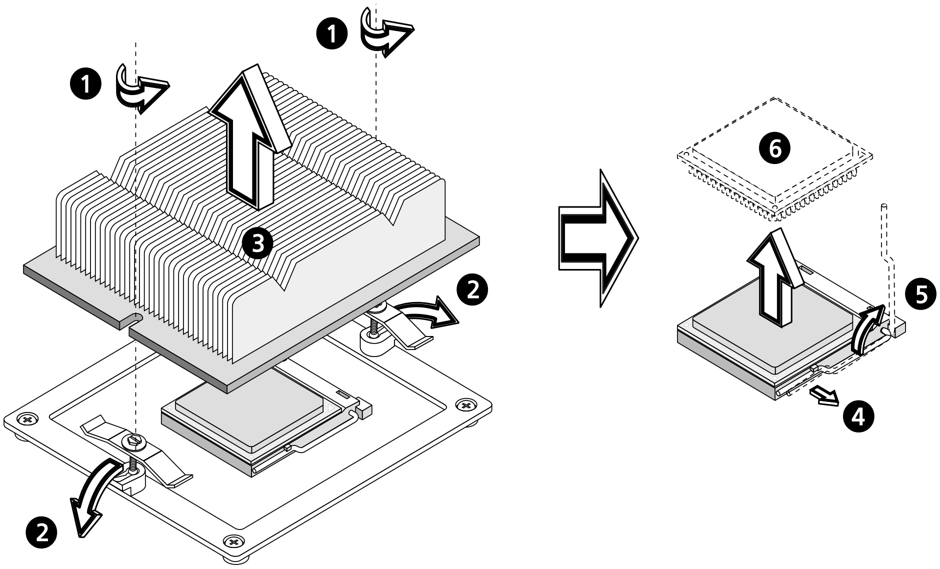
3 Locate the CPU socket on the mainboard.

Warning! The heatsink may feel hot after long period of usage. It is recommended to allow a few minutes of cooling period before attempting the upgrade.

4 Loosen the two screws that hold the heatsink to the heatsink base (1) then flip the clips outward (2). Remove the heatsink (3).

Gently press the socket lever down and slightly outward (4) then pull it up to a 90° angle (5).

Carefully remove the CPU (6).



Installing the CPU

Before you proceed make sure that there is no CPU installed in the CPU socket. Follow the steps below to install a CPU:

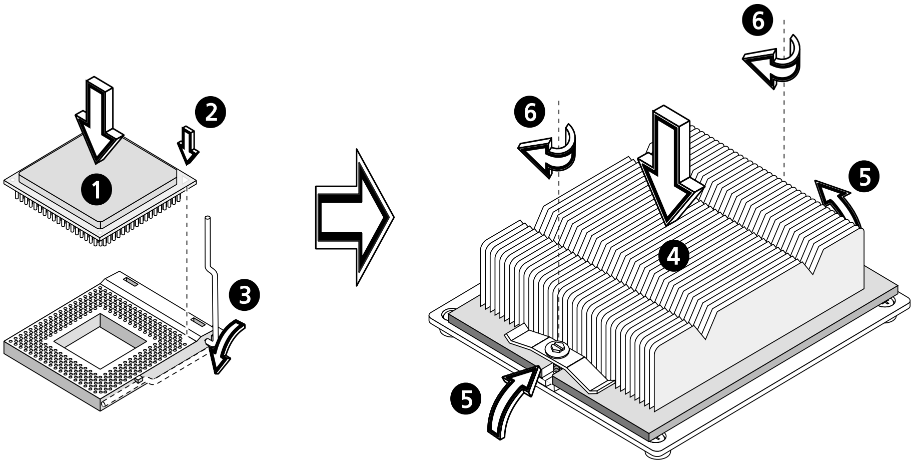
1 Locate the CPU socket on the mainboard.

2 Raise the socket lever up to a 90° angle.

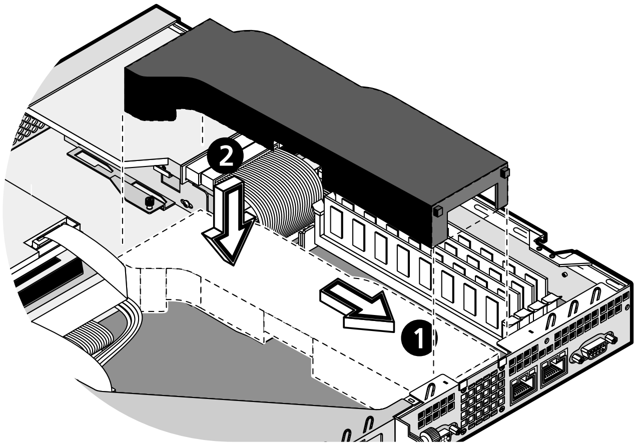
3 Align the the new CPU into its socket (1). Make sure that pin 1 (indicated by a notched corner) of the CPU connects to hole 1 of the socket (2).

Press down the socket lever to lock the new CPU into the socket (3).

Place the heatsink on top of the CPU (4). Secure the clips (5) then tighten the screws to secure the assembly (6).



4 Align the air baffle to the housing (1) then gently push it into place (2).



5 Replace the system cover.

Removing and installing memory modules

The four DIMM sockets on board accept 256-, 512-MB and 1-GB DDR (Double Data Rate) SDRAM DIMMs for a maximum memory capacity of 4 GB.

Note: The mainboard supports PC2100/DDR-266 SDRAM DIMMs. Contact your dealer for qualified DIMM vendors.

Refer to “Mainboard layout” on page 14 for the location of these DIMM slots in the mainboard.

Each DDR DIMM socket is independent from the other. This independence allows you to install DDR DIMMs with different capacities to form different configurations.

Note: The DDR DIMM has only one notch located on the center of the module.

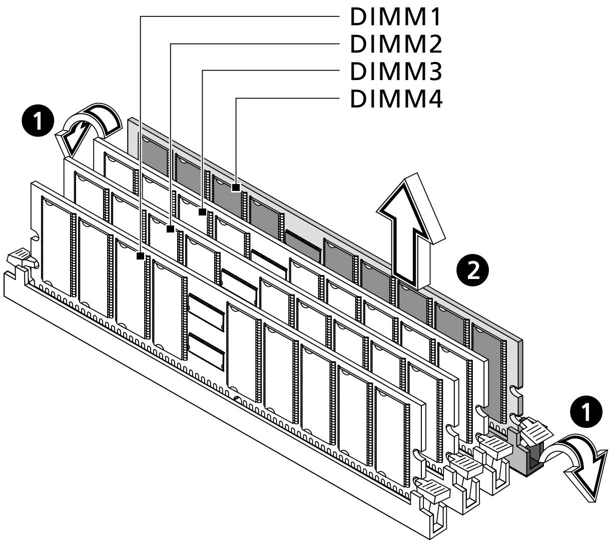
Removing a DDR DIMM

Before you can install a new DIMM in a socket, remove first any previously installed DIMM from that socket.

1 Remove the system cover. See page 35 for more detailed instructions.

2 Locate the DDR DIMM socket on the mainboard.

3 Press the holding clips on both sides of the socket outward to release the DDR DIMM (1). Gently pull the DDR DIMM out of the socket (2).



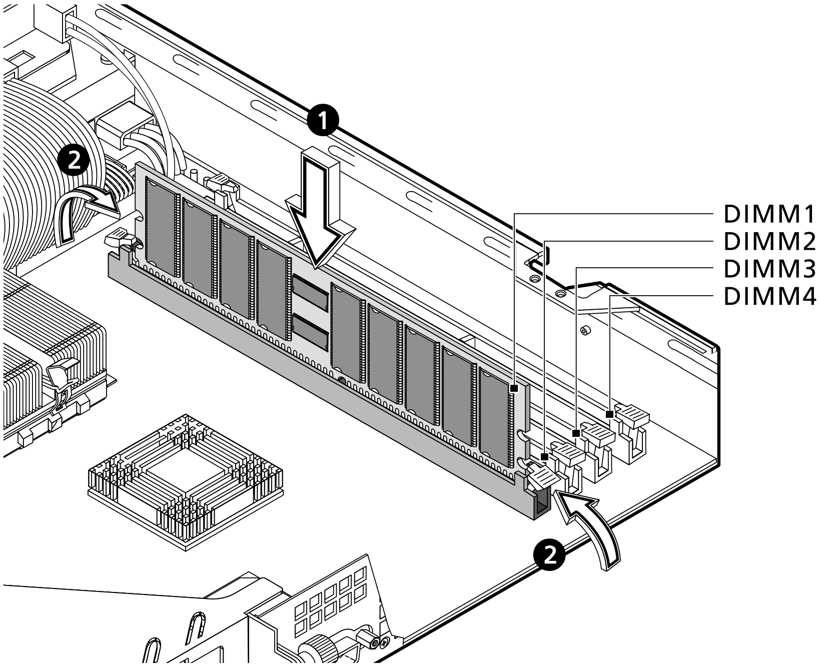
Note: Place your forefingers on the top of the DIMM before pressing the holding clips to gently disengage the DIMM from the socket.

Installing a DDR DIMM

Note: The DDR DIMMs must be installed in the following order: DIMM1, DIMM2, DIMM3 and DIMM4. Refer to the "Mainboard layout" on page 14 for the location of the DIMM.

1 Locate the DDR DIMM socket on the mainboard.

2 Align the DDR DIMM with the socket (1). Press the holding clips inward to lock the DDR DIMM in place (2).



Note: The DDR DIMM socket is slotted to ensure proper installation. If you insert a DDR DIMM but it does not fit easily into the socket, you may have inserted it incorrectly. Reverse the orientation of the DDR DIMM.

Reconfiguring the system memory

The system automatically detects the amount of memory installed. Run the BIOS Setup utility to view the new value for total system memory and make a note of it. Refer to “4 BIOS Setup utility” on page 53 for more information.

4 BIOS Setup utility

This chapter gives information about the system BIOS and discusses how to configure the system by changing the settings of the BIOS parameters.

BIOS Setup utility

The BIOS Setup utility is a hardware configuration program built into your system's Basic Input/Output System (BIOS). Since most systems are already properly configured and optimized, there is no need to run this utility. However, if you encounter configuration problems and get the "Run Setup" message, you will need to run this utility.

The Setup program loads the configuration values in a battery-backed nonvolatile memory called CMOS RAM. This memory area is not part of the system RAM which allows configuration data to be retained when power is turned off.

Note: If you repeatedly receive Run Setup messages, the battery may be bad. In this case, the system cannot retain configuration values in CMOS. Ask a qualified technician for assistance.

Before you run Setup, make sure that you have saved all open files. The system reboots immediately after you exit Setup.

Entering Setup

Power on the system to start the system POST (Power On Self Test) process. While booting, press the key combination **Ctrl+Alt+Esc** simultaneously.

The Configuration/Setup Utility main menu will appear.

Note: You must press **Ctrl+Alt+Esc** while the system is booting. This key combination does not work during any other time.

The system supports two Setup Utility levels: Configuration and Advanced.

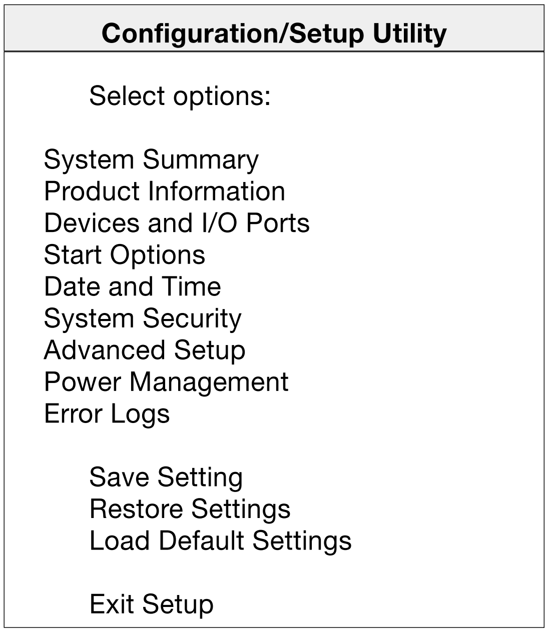
If you are an advanced user, you may want to check the detailed configuration of your system. Detailed system configurations are contained in the Advanced Level. To view the Advanced Level, press **F8** while viewing the Configuration/Setup Utility main menu.

The Key Help Guide (press <Alt+H> to activate) shows you how to move around the BIOS setup screen:

- Use the **Up** and **Down** arrow keys to move around the Setup Utility screen.
- Use the **Left** and **Right** arrow keys to move to the next page or to return to the previous page if the setup screen has more than one page available.
- Use the **Page Up**, **Page Down**, **+**, or **-** keys to select the options if they are available.
- Press **Esc** to return to the Main menu.

Note: The parameters on the screens shown in this User's guide display default system values. These values may not be the same as those in your system. The grayed-out items on the screens have fixed settings and are not user-configurable.

Configuration/Setup Utility main menu



Configuration/Setup Utility

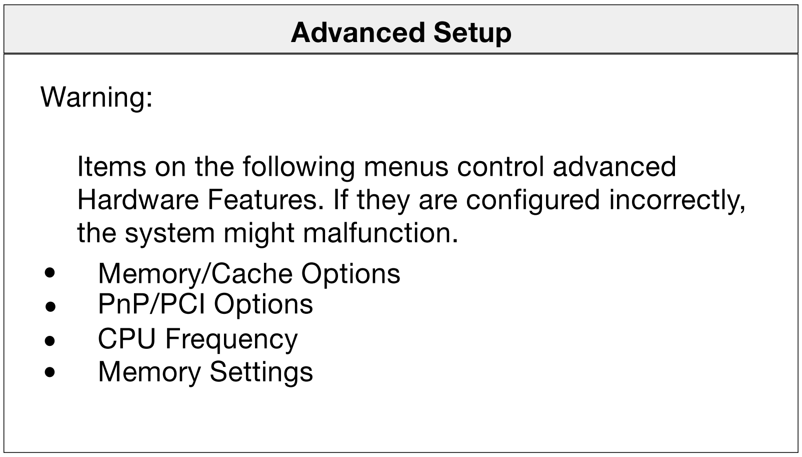
Select options:

System Summary
Product Information
Devices and I/O Ports
Start Options
Date and Time
System Security
Advanced Setup
Power Management
Error Logs

Save Setting
Restore Settings
Load Default Settings

Exit Setup

Advanced Setup Utility main menu



Advanced Setup

Warning:

Items on the following menus control advanced Hardware Features. If they are configured incorrectly, the system might malfunction.

- Memory/Cache Options
- PnP/PCI Options
- CPU Frequency
- Memory Settings

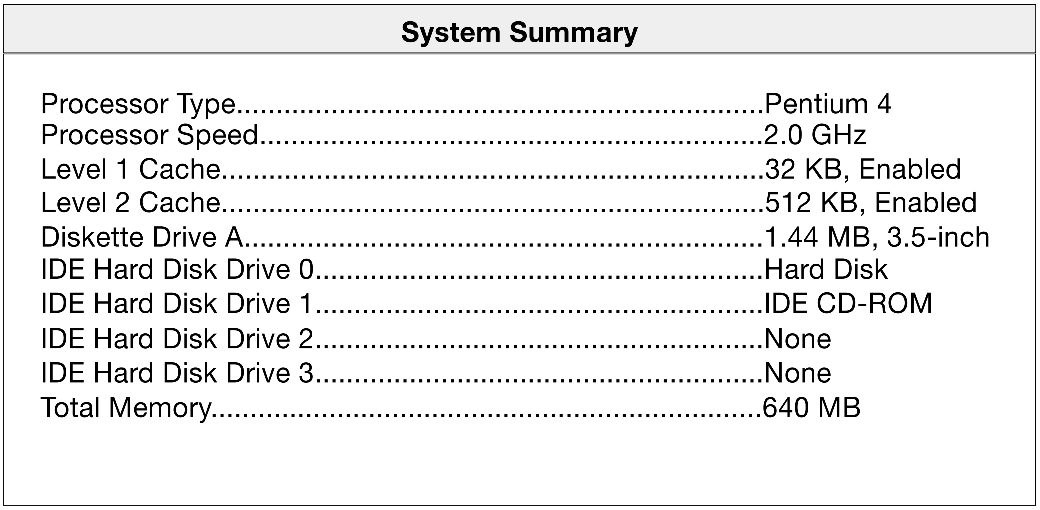
In the descriptive table following each of the main menu option screens:

- An asterisk (*) mark indicates that the parameter appears only when you are in the Advanced Level.
- The settings in **boldface** are the default and suggested parameter settings.

System Summary

The System Summary menu displays basic information about the system.

The screen below appears when you select **System Summary** from the main menu:



```
                         System Summary

Processor Type...............................................Pentium 4
Processor Speed..............................................2.0 GHz
Level 1 Cache................................................32 KB, Enabled
Level 2 Cache................................................512 KB, Enabled
Diskette Drive A.............................................1.44 MB, 3.5-inch
IDE Hard Disk Drive 0........................................Hard Disk
IDE Hard Disk Drive 1........................................IDE CD-ROM
IDE Hard Disk Drive 2........................................None
IDE Hard Disk Drive 3........................................None
Total Memory.................................................640 MB
```

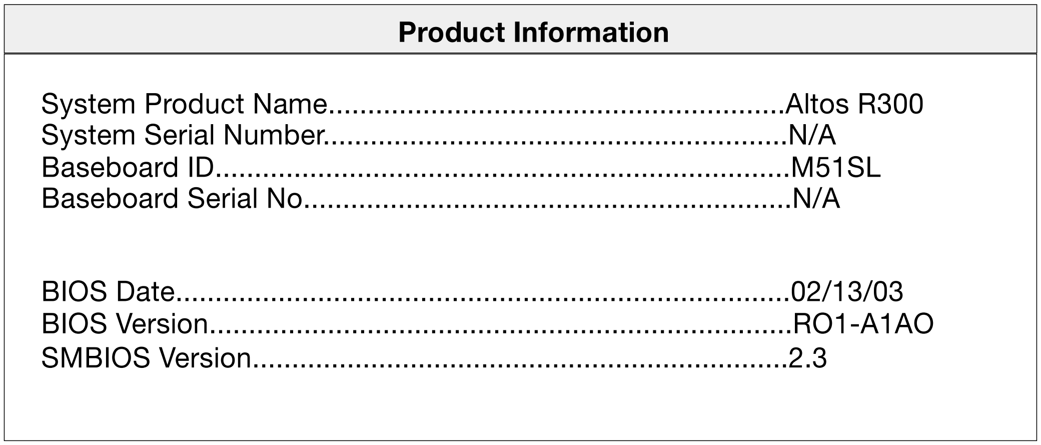
Parameter	Description
Processor Type	Type of processor currently installed in your system.
Processor Speed	Clock speed of the processor currently installed in your system.
Level 1 Cache	Total amount of first-level cache memory or the internal fast accessed memory size (i.e., the memory integrated into the CPU).
Level 2 Cache	Total amount of second-level cache memory that comes with the CPU. The available cache sizes are 256 and 512 KB.
Diskette Drive A	Current system settings for floppy disk drive A.
IDE Hard Disk Drive 0	Indicates a hard disk type.
IDE Hard Disk Drive 1	Indicates a hard disk type.
IDE Hard Disk Drive 2	Indicates a hard disk type.

Parameter	Description
IDE Hard Disk Drive 3	Indicates a hard disk type.
Total Memory	Total amount of onboard memory. The memory size is automatically detected by BIOS during the POST. If you install additional memory, the system automatically adjusts this parameter to display the new memory size.

Product Information

Product Information menu displays the general data about the system, such as the product name, BIOS version, mainboard ID, serial number, etc. These information are necessary for troubleshooting and may be required when asking for technical support. These entries are for your reference only and are not user-configurable.

The screen below shows the **Product Information** parameters:

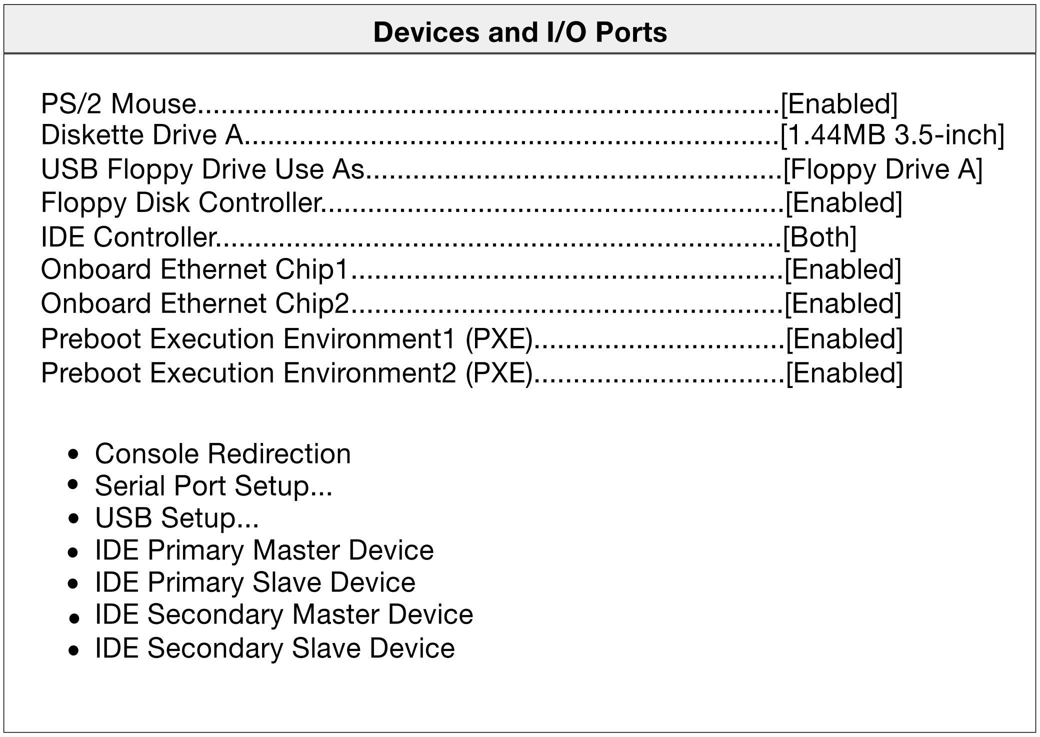


```
                    Product Information

System Product Name.........................................Altos R300
System Serial Number........................................N/A
Baseboard ID................................................M51SL
Baseboard Serial No.........................................N/A


BIOS Date...................................................02/13/03
BIOS Version................................................RO1-A1AO
SMBIOS Version..............................................2.3
```

Parameter	Description
System Product Name	Official name of the system.
System Serial Number	System’s serial number.
Baseboard ID	Mainboard’s identification number.
Baseboard Serial No	Mainboard’s serial number.
BIOS Date	Release date of the BIOS utlility.
BIOS Version	Version of the BIOS utility.
SMBIOS Version	Version of the SMBIOS. SMBIOS (System Management BIOS) allows you to check your system’s hardware without actually opening it up. Hardware checking is done via software checkpoints during start up.

Devices and I/O Ports

Devices and I/O Ports allows you to configure the onboard communication ports and the onboard devices. Selecting this option displays the screen below:



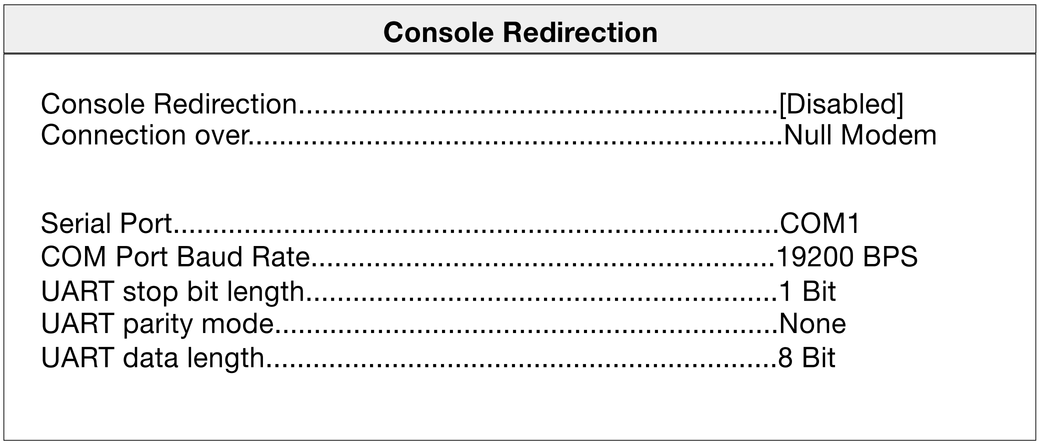
```
                         Devices and I/O Ports

PS/2 Mouse..........................................................[Enabled]
Diskette Drive A....................................................[1.44MB 3.5-inch]
USB Floppy Drive Use As.............................................[Floppy Drive A]
Floppy Disk Controller..............................................[Enabled]
IDE Controller......................................................[Both]
Onboard Ethernet Chip1..............................................[Enabled]
Onboard Ethernet Chip2..............................................[Enabled]
Preboot Execution Environment1 (PXE)................................[Enabled]
Preboot Execution Environment2 (PXE)................................[Enabled]

  • Console Redirection
  • Serial Port Setup...
  • USB Setup...
  • IDE Primary Master Device
  • IDE Primary Slave Device
  • IDE Secondary Master Device
  • IDE Secondary Slave Device
```

Parameter	Description	Option
PS/2 Mouse	Enables or disables the onboard PS/2 mouse controller.	**Enabled** Disabled
Diskette Drive A	Indicates the floppy disk drive type.	**1.44 MB, 3.5-inch** None 360 KB, 5.25-inch 1.2 MB, 5.25-inch 720 KB, 3.5-inch 2.88 MB, 3.5-inch
USB Floppy Drive Use As	Sets the default USB floppy disk drive.	**Floppy Drive A*** Normal

Parameter	Description	Option
Floppy Disk Controller	Enables or disables the onboard floppy disk drive controller.	**Enabled** Disabled
IDE Controller	Enables or disables the onboard IDE controller.	**Both** Disabled Primary
Onboard Ethernet Chip 1	Enables or disables the first onboard network feature.	**Enabled** Disabled
Onboard Ethernet Chip 2	Enables or disables the second onboard network feature.	**Enabled** Disabled
Preboot Execution Environment 1 (PXE)	When enabled, allows you to boot PXE server from LAN port 1.	**Enabled** Disabled
Preboot Execution Environment 2 (PXE)	When enabled, allows you to boot PXE server from LAN port 2.	**Enabled** Disabled
Console Redirection	Press **Enter** to access the Console Redirection submenu.	
Serial Port Setup	Press **Enter** to access the Serial Port Setup submenu.	
USB Setup	Press **Enter** to access the USB Setup submenu.	
IDE Primary Master Device	Press **Enter** to access the IDE Primary Master Device submenu.	
IDE Primary Slave Device	Press **Enter** to access the IDE Primary Slave Device submenu.	
IDE Secondary Master Device	Press **Enter** to access the IDE Secondary Master Device submenu.	
IDE Secondary Slave Device	Press **Enter** to access the IDE Secondary Slave Device submenu.	

Console Redirection

The screen below appears when you select the **Console Redirection** parameter from the Devices and I/O Ports screen:



```
Console Redirection

Console Redirection...........................................................[Disabled]
Connection over..................................................................Null Modem


Serial Port............................................................................COM1
COM Port Baud Rate.........................................................19200 BPS
UART stop bit length...........................................................1 Bit
UART parity mode...............................................................None
UART data length...............................................................8 Bit
```

Parameter	Description	Option
Console Redirection	Enables or disables the BIOS console redirection during system boot up. It utilizes a null modem that allows you to remotely monitor and analyze a server condition, update system BIOS settings and quickly restore the system to normal operation via local site or remote console. Console redirection aims to maximize server uptime, bring the benefit of higher productivity and lower server ownership costs. The control keys for remote station management are listed on page 65.	**Disabled** Enabled
Connection over	Supports null modem connection via serial port.	**Null Modem**
Serial Port	Selects the serial port to be used for connecting to the console.	**COM1** Disabled

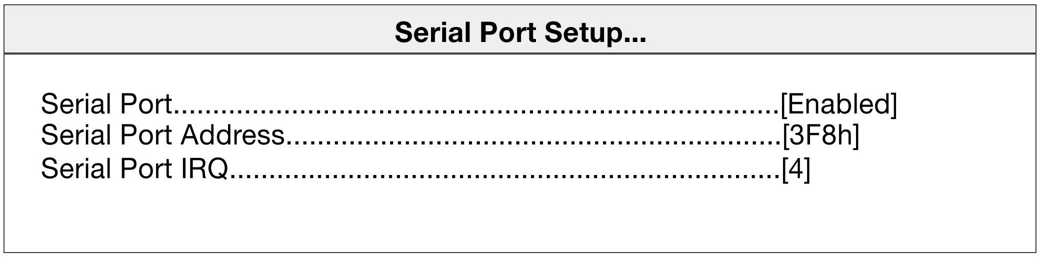
Parameter	Description	Option
COM Port Baud Rate	This parameter lets you set the transfer rate of the COM port. The parameter setting depends on your modem specification; therefore, before you change the setting of this parameter, check the documentation that came with your modem.	**9600 BPS** 19.2 K 38.4 K 57.6 K 115.2 K
UART stop bit length	The UART (universal asynchronous receiver-transmitter) stop bit length indicates one stop bit will occur after a modem transmitts a serial data to the system.	1 Bit
UART parity mode	There is no parity checking in UART. Parity checking refers to the use of parity bits to ensure data has been transmitted accurately.	None
UART data length	The data bit length for every serial data transmitted to the system is 8 bits.	8 Bit

Listed in the table below are the commonly used hot keys. You can only activate the key mapping when Console Redirection function is enabled.

Hot keys/Mapping keys (remote station and console)
F1
F10
F12
Up Arrow
Down Arrow
Right Arrow
Left Arrow
<Enter>
<Esc>
<Ctrl>+<Alt>+<Esc> (Enter BIOS Setup)
<Ctrl>+<Alt>+<Del> (Warm Reboot)
<Ctrl>+A (Adapter SCSI Setup)
<Ctrl>+C (LSI SCSI Setup)
<Ctrl>+M (LSI RAID)
<Ctrl>+H (LSI Web-RAID BIOS)

Serial Port Setup

The screen below appears when you select the **Serial Port Setup** parameter from the Devices and I/O Ports screen:

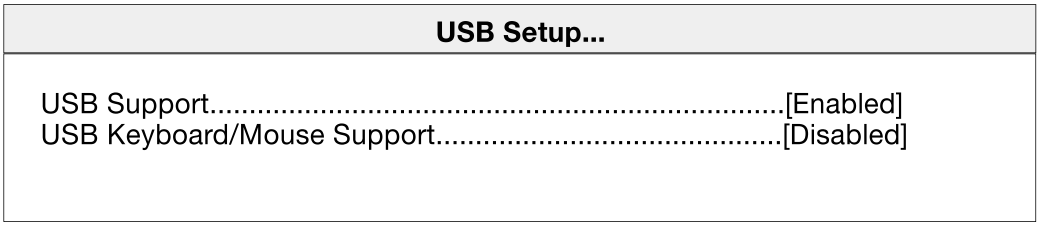


```
Serial Port Setup...

Serial Port.................................................................[Enabled]
Serial Port Address.........................................................[3F8h]
Serial Port IRQ.............................................................[4]
```

Parameter	Description	Option
Serial Port	Enables or disables the serial port.	**Enabled** Disabled
Serial Port Address	Sets the I/O base address of the serial port.	**3F8h** 2F8h 3E8h 2E8h
Serial Port IRQ	Sets the IRQ (interrupt request) channel of the serial port.	**4** 11

USB Setup

The screen below appears when you select the **USB Setup** parameter from the Devices and I/O Ports screen:



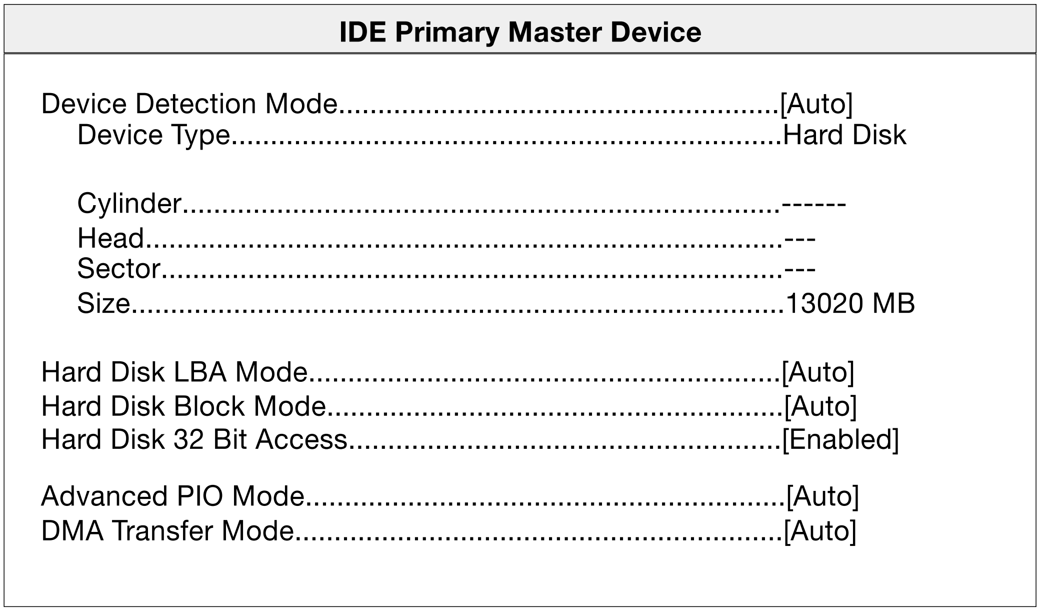
USB Setup...

USB Support...[Enabled]
USB Keyboard/Mouse Support...[Disabled]

Parameter	Description	Option
USB Support	Enables or disables the on-chip USB.	**Enabled** Disabled
USB Keyboard/ Mouse Support	Enables or disables the USB keyboard or mouse driver on the onboard BIOS. The keyboard/mouse driver simulates legacy keyboard/mouse commands and lets you use a USB keyboard/ mouse during POST or after boot if you don't have a USB driver in the operating system.	**Disabled** Enabled

IDE Primary Master Device

The screen below appears when you select any of the the IDE drive parameters from the Devices and I/O Ports screen:



```
                         IDE Primary Master Device

Device Detection Mode.......................................................[Auto]
   Device Type.....................................................................Hard Disk

   Cylinder...........................................................................------
   Head..................................................................................---
   Sector................................................................................---
   Size....................................................................................13020 MB

Hard Disk LBA Mode...........................................................[Auto]
Hard Disk Block Mode.........................................................[Auto]
Hard Disk 32 Bit Access......................................................[Enabled]

Advanced PIO Mode.............................................................[Auto]
DMA Transfer Mode.............................................................[Auto]
```

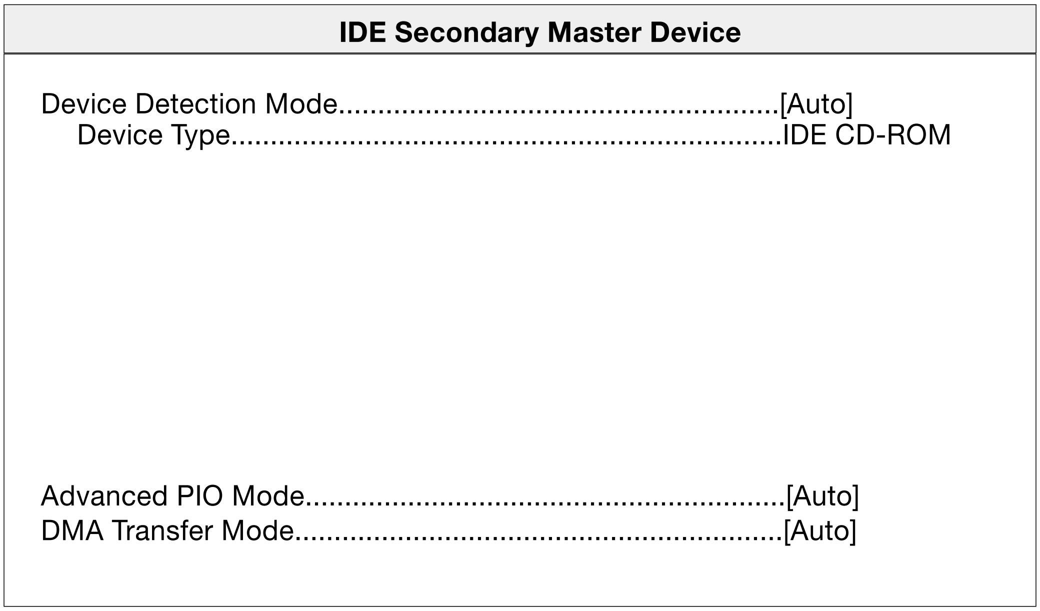
Parameter	Description	Option
Device Detection Mode	Lets you specify the type of hard disk installed in your system. If you want BIOS to automatically configure this hard disk, select Auto. If you know your hard disk type, you can enter the setting manually.	**Auto** User input None
Device Type	Indicates a hard disk type device.	
Cylinder	Specifies the number of cylinders in your hard disk, and is automatically set depending on your Type parameter setting.	User input
Head	Specifies the number of heads in your hard disk, and is automatically set depending on your Type parameter setting.	User input

Parameter	Description	Option
Sector	Specifies the number of sectors in your hard disk, and is automatically set depending on your Type parameter setting.	User input
Size	Specifies the size of your hard disk, in MB.	User input
Hard Disk LBA Mode*	When set to Auto, the BIOS utility automatically detects if the installed hard disk supports the function. If supported, it allows you to use a hard disk with a capacity of more than 528 MB. This is made possible through the Logical Block Address (LBA) mode translation. However, this enhanced IDE feature works only under DOS, Windows 3.x, Windows 95, Windows 98, Windows NT 3.5 and above, and Windows 2000. Other operating systems require this parameter to be set to Disabled.	**Auto** Disabled
Hard Disk Block Mode*	Enhances disk performance depending on the hard disk in use. If you set this parameter to Auto, the BIOS utility automatically detects if the installed hard disk drive suports the Block Mode function. If supported, it allows data transfer in blocks (multiple sectors) at a rate of 256 bytes per cycle.	**Auto** Disabled
Hard Disk 32-bit Access *	Improves system performance by allowing the use of the 32-bit hard disk access. This enhanced IDE feature works only under DOS, Windows 3.x, Windows 95, Windows 98, Windows NT, Windows 2000, and Novell Netware. If your software or hard disk does not support this function, set this parameter to Disabled.	**Enabled** Disabled

Parameter	Description	Option
Advanced PIO Mode *	When set to Auto, the BIOS utility automatically detects if the installed hard disk supports the function. If supported, it allows for faster data recovery and read/write timing that reduces hard disk activity time. This results in better hard disk performance. To disregard this feature, change the setting to Disabled.	**Enabled** Auto Mode 0 Mode 1 Mode 2 Mode 3 Mode 4 Disabled
DMA Transfer Mode *	The Ultra DMA and Multi-DMA modes enhance hard disk performance by increasing the transfer rate. However, besides enabling these features in the BIOS Setup, both the Ultra DMA and Multi-DMA modes require the DMA driver to be loaded.	**Auto** Multiword Mode 0 Multiword Mode 1 Multiword Mode 2 Ultra Mode 0 Ultra Mode 1 Ultra Mode 2 Ultra Mode 3 Ultra Mode 4 Ultra Mode 5 Disabled

IDE Secondary Master Device

The screen below appears when you select any of the the IDE drive parameters from the Devices and I/O Ports screen:



IDE Secondary Master Device

```
Device Detection Mode.......................................................[Auto]
    Device Type.....................................................................IDE CD-ROM









Advanced PIO Mode............................................................[Auto]
DMA Transfer Mode.............................................................[Auto]
```

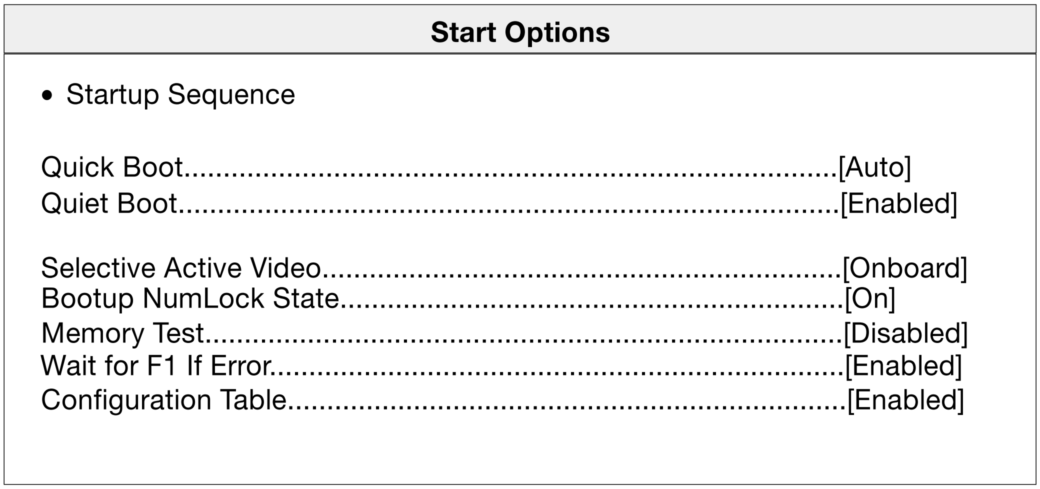
Parameter	Description	Option
Device Detection Mode	Lets you specify the type of hard disk installed in your system. If you want BIOS to automatically configure your hard disk, select Auto. If you know your hard disk type, you can enter the setting manually.	**Auto** User input None
Device Type	Indicates a hard disk type device.	
Advanced PIO Mode *	When set to Auto, the BIOS utility automatically detects if the installed hard disk supports the function. If supported, it allows for faster data recovery and read/write timing that reduces hard disk activity time. This results in better hard disk performance. To disregard the feature, change the setting to Disabled.	**Enabled** Auto Mode 0 Mode 1 Mode 2 Mode 3 Mode 4 Disabled

Parameter	Description	Option
DMA Transfer Mode *	The Ultra DMA and Multi-DMA modes enhance hard disk performance by increasing the transfer rate. However, besides enabling these features in the BIOS Setup, both the Ultra DMA and Multi-DMA modes require the DMA driver to be loaded.	**Auto** Multiword Mode 0 Multiword Mode 1 Multiword Mode 2 Ultra Mode 0 Ultra Mode 1 Ultra Mode 2 Ultra Mode 3 Ultra Mode 4 Ultra Mode 5 Disabled

Start Options

Start Options allows you to specify your preferred settings for boot up.

The screen below appears when you select **Start Options** from the main menu:



Start Options

- Startup Sequence

Quick Boot..[Auto]
Quiet Boot..[Enabled]

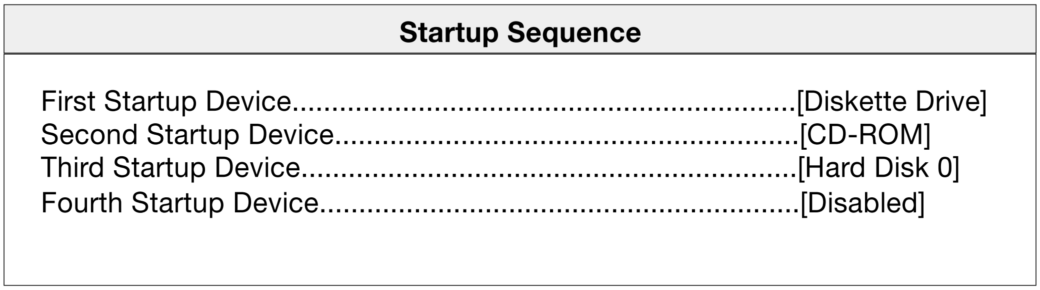
Selective Active Video..............................[Onboard]
Bootup NumLock State................................[On]
Memory Test...[Disabled]
Wait for F1 If Error................................[Enabled]
Configuration Table.................................[Enabled]

Parameter	Description	Option
Startup Sequence	Press **Enter** to access the Startup Sequence submenu.	
Quick Boot	Allows the system to boot faster by skipping some POST (Power On Self Test) routines.	**Auto** Disabled

Parameter	Description	Option
Quiet Boot	Enables or disables the Quiet boot function. When set to Enabled, BIOS setup is in graphical mode and displays only an identification logo during POST and while booting. After booting, the screen displays the operating system prompt (such as DOS) or logo (such as Windows). If any error occurs while booting, the system automatically switches to text mode. Even if your setting is Enabled, you may still switch to text mode, while booting by pressing the **CTRL-ALT-ESC** key when you see the “Press CTRL-ALT-ESC key to enter setup” message on the screen. When set to Disabled, BIOS setup is in the conventional text mode where you see the system initialization details on the screen.	**Enabled** Disabled
Select Active Video	When set to Auto, this parameter allows the system to enable or disable the onboard VGA card.	**Onboard** Auto
Bootup NumLock Status	Allows you to activate the Num Lock function upon booting.	**On** Off
Memory Test	When set to Enabled, this parameter allows the system to perform a RAM test during the POST routine. When set to Disabled, the system detects only the memory size and bypasses the test routine. **Note:** This parameter can only be configured when the Quick Boot parameter is disabled.	**Disabled** Enabled
Wait for F1 If Error	When this item is enabled you will be prompted to press **F1** when an error is detected during boot up.	**Enabled** Disabled
Configuration Table	Displays preboot system configuration table when enabled.	**Enabled** Disabled

Startup Sequence

The screen below appears when you select the **Startup Sequence** parameter from the Start Options screen:

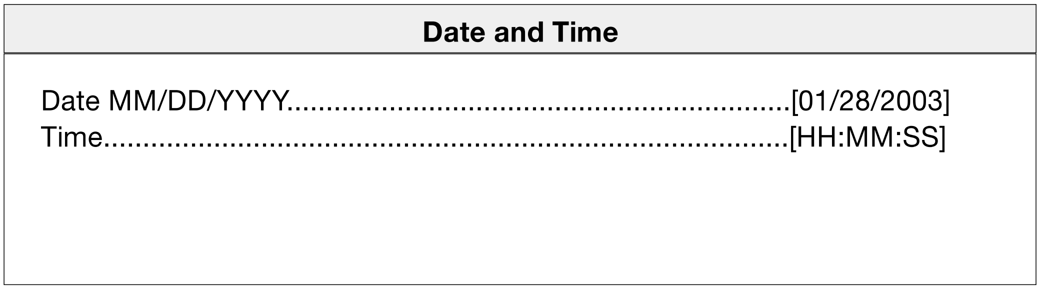


```
                         Startup Sequence

First Startup Device.............................................................[Diskette Drive]
Second Startup Device........................................................[CD-ROM]
Third Startup Device............................................................[Hard Disk 0]
Fourth Startup Device..........................................................[Disabled]
```

Parameter	Description	Option
First Startup Device	Sets the first device from which the BIOS will attempt to boot up.	**Diskette Drive** CD-ROM Hard Disk
Second Startup Device	Sets the device from which the system will attempt to boot up when the first attempt failed.	**CD-ROM** Hard Disk Floppy
Third Startup Device	Sets the device from which the system will attempt to boot up when the first and second attempts failed.	**Hard Disk 0** Floppy CD-ROM
Fourth Startup Device	Sets the device from which the system will attempt to boot up when the first, second and third attempts failed.	**Disabled** Enabled

Date and Time

The real-time clock keeps the system date and time. After setting the date and time, you do not need to enter them every time you turn on the system. As long as the internal battery remains good (approximately seven years) and connected, the clock continues to keep the date and time accurately even when the power is off. Selecting this option displays the screen below:



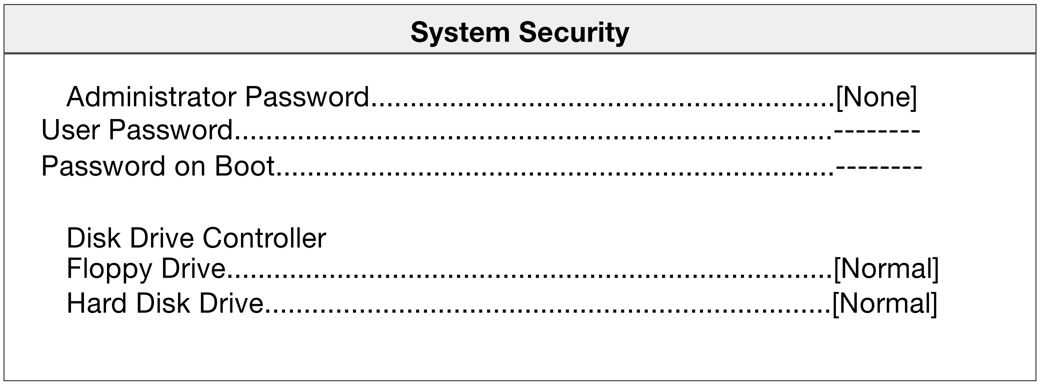
```
                         Date and Time

Date MM/DD/YYYY..........................................................[01/28/2003]
Time.....................................................................[HH:MM:SS]
```

Parameter	Description
Date	Set the date following the weekday-month-day-year format. Valid values for month, day, and year are: Month: 01 to 12 Day: 1 to 31 Year: 1980 to 2079
Time	Set the time following the hour-minute-second format. Valid values for hour, minute, and second are: Hour: 00 to 23 Minute: 00 to 59 Second: 00 to 59

System Security

The System Security menu allows you to safeguard and protect the system from unauthorized use by setting up access passwords.

The screen below appears when you select **System Security** from the main menu:



```
                          System Security

   Administrator Password..................................................[None]
 User Password...........................................................--------
 Password on Boot........................................................--------

   Disk Drive Controller
   Floppy Drive..............................................................[Normal]
   Hard Disk Drive.........................................................[Normal]
```

Parameter	Description	Option
Administrator Password	Prevents unauthorized access to the BIOS Setup utility. The Present setting allows you to set an Administrator password.	**None** Present
User Password	Secures your system against unauthorized use. User password is available only when a Administrator password is set. The Present settings allows you to set a User password.	**None** Present
Password on Boot	Select Enabled to activate security check during POST.	**Disabled** Enabled
Disk Drive Controller	The disk drive control feature enables or disables the read/write functions of the disk drives. This parameter can also control the diskette drive boot function to prevent loading operating systems or other programs from a certain drive while the other drives remain operational.	

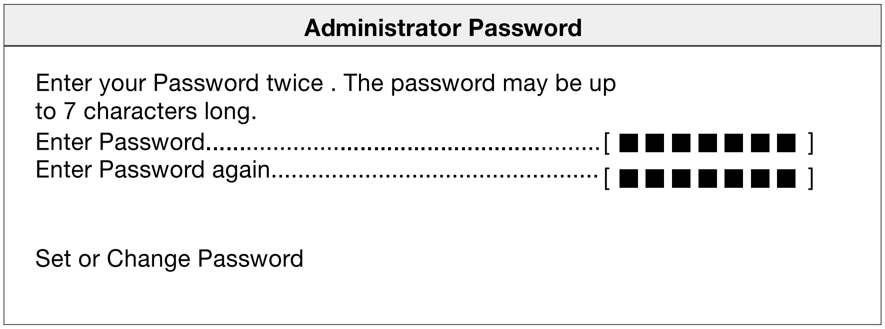
Parameter	Description	Option
Floppy Drive	Sets the control level of the floppy drive.	**Normal** Write Protect All Sectors Write Protect Boot Sectors Disabled
Hard Disk Drive	Sets the control level of the hard disk drive.	**Normal** Present

Setting and changing the password

To set or change an Administrator/User password:

1 Enable the Administrator Password or User Password parameter in the System Security menu by pressing the **Up** or **Down** arrow key to select **Present**. The corresponding password window appears:

Administrator Password window

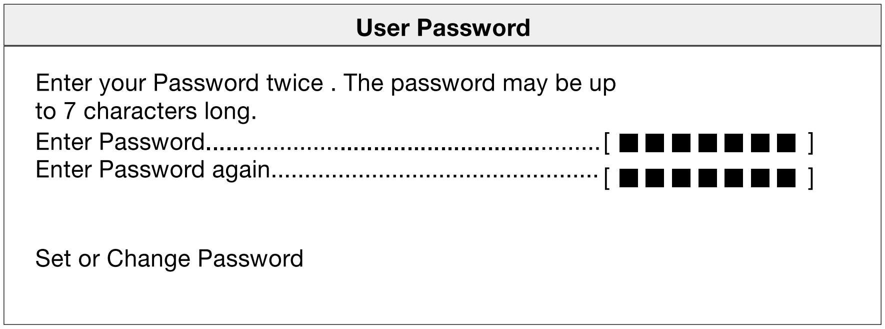


Administrator Password

Enter your Password twice . The password may be up
to 7 characters long.
Enter Password..[■■■■■■■]
Enter Password again...[■■■■■■■]

Set or Change Password

User Password window



User Password

Enter your Password twice . The password may be up
to 7 characters long.
Enter Password..[■■■■■■■]
Enter Password again...[■■■■■■■]

Set or Change Password

2 Type a password then press **Enter**. The password may consist of up to seven alphanumeric characters.

Note: Be careful when typing your password because the actual characters do not appear on the screen; password characters appear as asterisks (*).

3 Retype the password to verify your first entry then press **Enter**.

4 Highlight the **Set or Change Password** option then press **Enter**.

5 Press **Esc** to return to the System Security screen.

6 Press **Esc** to exit Setup. The Exit Setup screen appears.

7 Choose **Yes** to save your settings and exit Setup. Your password will be saved to CMOS.

Removing a password

To remove your Administrator/User password:

1 Disable the Administrator Password or User Password parameter in the System Security menu by pressing the up or down arrow key to select **None**.

2 Press **Esc** to return to the System Security menu.

3 Press **Esc** to exit Setup. The Exit Setup screen appears.

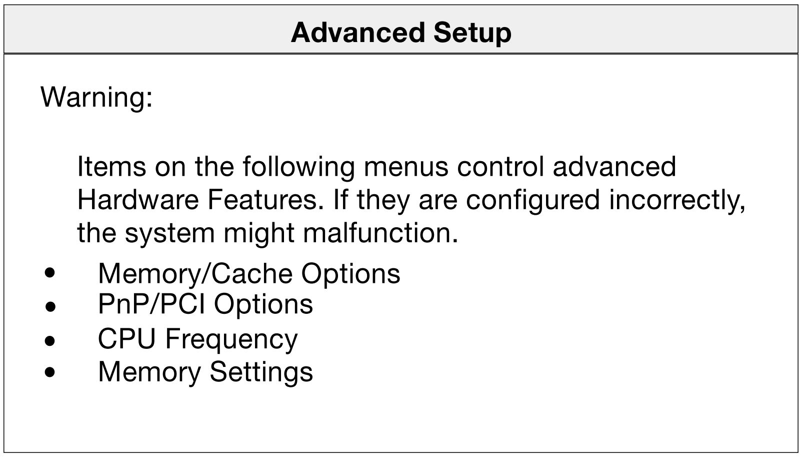
4 Choose **Yes** to save your settings and exit Setup. Your previous password will be removed from CMOS.

Advanced Setup

Caution! To avoid damaging the system, do not change any settings in the Advanced Setup submenus unless you are a qualified technician.

The Advanced Setup screen allows you to configure the system memory, PCI device settings, CPU frequency and memory settings.

The screen below shows the **Advanced Setup** parameters:



Advanced Setup

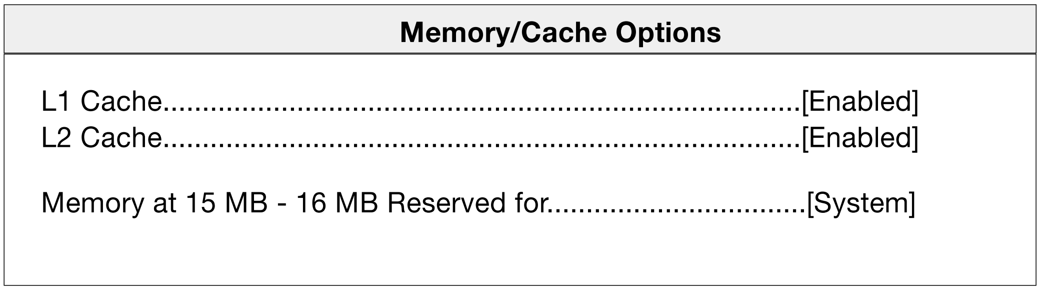
Warning:

Items on the following menus control advanced Hardware Features. If they are configured incorrectly, the system might malfunction.

- Memory/Cache Options
- PnP/PCI Options
- CPU Frequency
- Memory Settings

Memory/Cache Options

Memory/Cache Options allows you to configure the advanced system memory functions. Selecting this option displays the screen below:



Memory/Cache Options

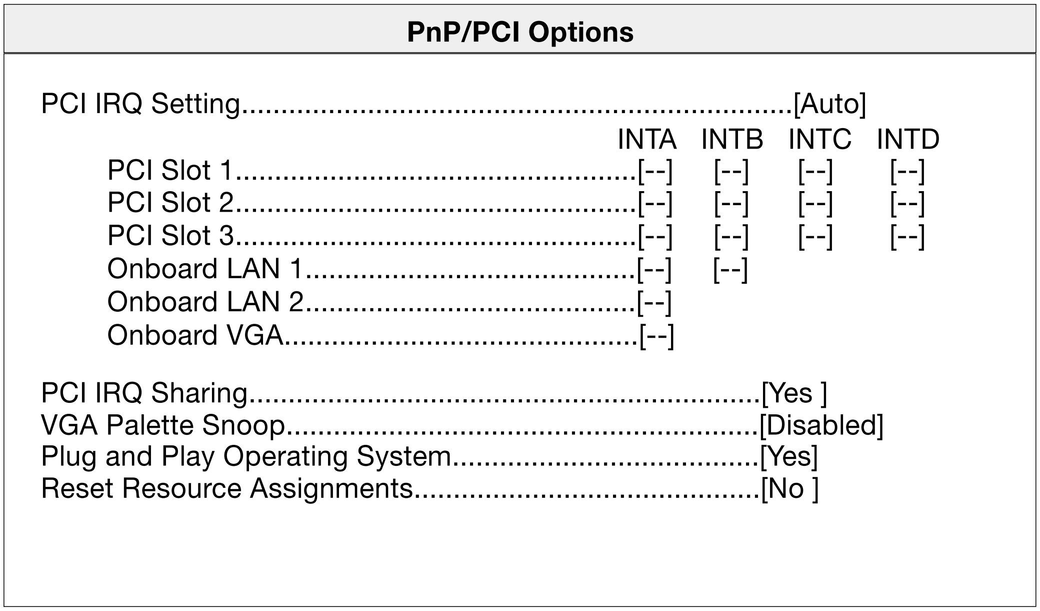
L1 Cache...[Enabled]
L2 Cache...[Enabled]

Memory at 15 MB - 16 MB Reserved for................................[System]

Parameter	Description	Option
Level 1 Cache	Enables or disables the first-level or internal memory, that is, the memory integrated into the CPU.	**Enabled** Disabled
Level 2 Cache	Enables or disables the second-level cache memory which is incorporated in the CPU module.	**Enabled** Disabled
Memory at 15 MB- 18 MB Reserved for	Lets you reserve system memory area for special ISA (Industry Standard Architecture) bus cards.	**System** Add on card

PnP/PCI Options

PnP/PCI Options allows you to specify the settings for your PCI devices. Selecting this option displays the screen below:



```
                         PnP/PCI Options

PCI IRQ Setting.....................................................[Auto]
                                           INTA  INTB  INTC  INTD
     PCI Slot 1.................................[--]  [--]  [--]  [--]
     PCI Slot 2.................................[--]  [--]  [--]  [--]
     PCI Slot 3.................................[--]  [--]  [--]  [--]
     Onboard LAN 1..............................[--]  [--]
     Onboard LAN 2..............................[--]
     Onboard VGA................................[--]

PCI IRQ Sharing................................................[Yes ]
VGA Palette Snoop..............................................[Disabled]
Plug and Play Operating System.................................[Yes]
Reset Resource Assignments.....................................[No ]
```

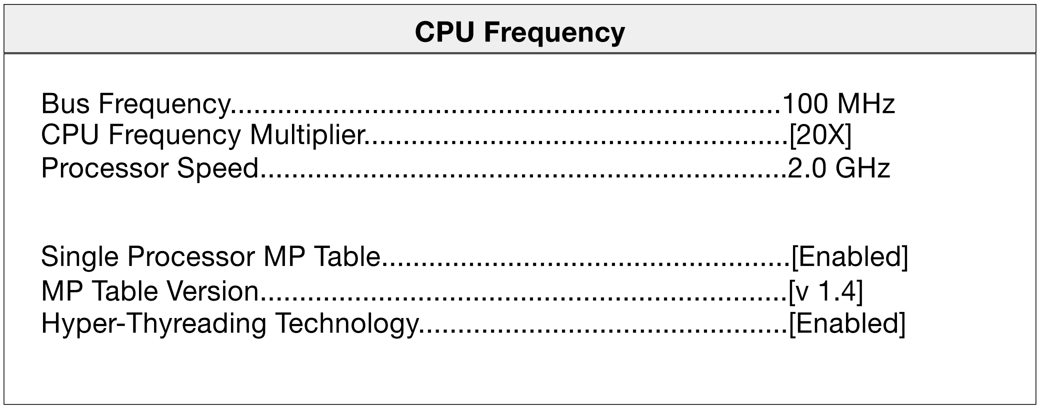
Parameter	Description	Option
PCI IRQ Setting	Select Auto to let BIOS automatically configure the plug-and-play devices installed on your system; otherwise, select Manual. **Note:** Refer to the documentation that came with your PCI card for more technical information.	**Auto** Manual
PCI Slot 1 PCI Slot 2 PCI Slot 3	When you set the PCI IRQ Setting parameter to Auto, these parameters specify the auto-assigned interrupt for each of the PCI devices. When you set the PCI IRQ Setting parameter to Manual, you need to specify the interrupt that you want to assign for each PCI device installed in your system.	User input

Parameter	**Description**	**Option**
Onboard LAN 1 Onboard LAN 2	When you set the PCI IRQ Setting parameter to Auto, this parameter specifies the auto-assigned interrupt for the onboard LAN controlers installed in your system. When you set the PCI IRQ Setting parameter to Manual, you need to specify the interrupt that you want to assign for the onboard LAN controllers installed in your system.	User input
Onboard VGA	When you set the PCI IRQ Setting parameter to Auto, this parameter specifies the auto-assigned interrupt for the onboard VGA controller installed in your system. When you set the PCI IRQ Setting parameter to Manual, you need to specify the interrupt that you want to assign for the onboard VGA controller installed in your system.	User input
PCI IRQ Sharing	Setting this parameter to Yes allows you to assign the same IRQ to two different devices. To disable the feature, select No. **Note:** If there are no IRQs available to assign for the remaining device function, it is recommended that you enable this parameter.	**Yes** No

Parameter	Description	Option
VGA Palette Snoop	This parameter permits you to use the palette snooping feature if you installed more than one VGA card in the system. The VGA palette snoop function allows the control palette register (CPR) to manage and update the VGA RAMDAC (Digital Analog Converter, a color data storage) of each VGA card installed in the system. The snooping process lets the CPR send a signal to all the VGA cards so that they can update their individual RAMDACs. The signal goes through the cards continuously until all RAMDAC data has been updated. This allows the display of multiple images on the screen. **Note:** Some VGA cards require specific settings for this feature. Check your VGA card documentation before setting this parameter.	**Disabled** Enabled
Plug and Play Operating System	When this parameter is set to Yes, BIOS initializes only PnP boot devices such as SCSI cards. When set to No, BIOS initializes all PnP boot and non-boot devices such as sound cards. **Note:** Set this parameter to Yes only if your operating system is Windows 95/98 or Windows 2000.	**No** Yes
Reset Resource Assignments	Set this parameter to Yes to avoid IRQ conflicts when installing non-PnP or PnP ISA cards. This clears all resource assignments and allows BIOS to reassign resources to all installed PnP devices the next time the system boots. After clearing the resource data, the parameter resets to No.	**No** Yes

CPU Frequency

This parameter displays your CPU’s speed and bus frequency. Selecting this option displays the screen below:



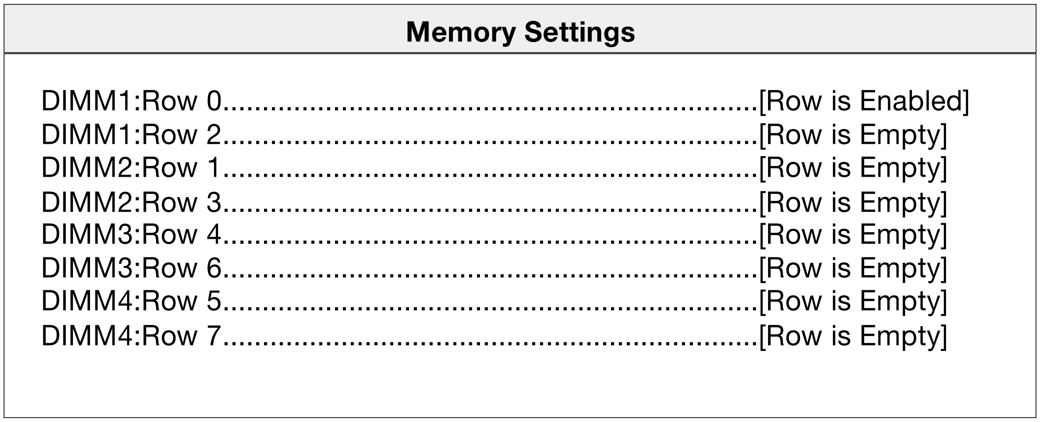
```
CPU Frequency

Bus Frequency......................................................................100 MHz
CPU Frequency Multiplier......................................................[20X]
Processor Speed..................................................................2.0 GHz


Single Processor MP Table....................................................[Enabled]
MP Table Version..................................................................[v 1.4]
Hyper-Thyreading Technology...............................................[Enabled]
```

Parameter	Description	Option
Bus Frequency	The bus frequency refers to the speed by which data is transferred between internal system components and the CPU or the main memory of the CPU. A fast bus allows data to be transferred faster, which makes applications run faster.	
CPU Frequency Multiplier	The CPU/Bus ratio of the system.	20 X
Processor Speed	The processor speed is the speed at which a microprocessor executes instructions. Clock speeds are expressed in megahertz (MHz), with 1 MHz being equal to 1 million cycles per second. The faster the clock, the more instructions the CPU can execute per second.	

Parameter	Description	Option
Single Processor MP Table	Enabling this parameter allows BIOS to create a multiprocessor (MP) table for Windows NT use. In a single-processor system running Windows NT, you may disable this parameter to enhance system performance. If you install another CPU for a dual system, enable this parameter then reinstall Windows NT. In cases when this parameter is enabled before installing Windows NT in a single-processor system, you may upgrade to a multiprocessor system without reinstalling Windows NT.	**Enabled** Disabled
MP Table Version	This parameter allows you to choose the version of the multiprocessor specifications.	**V1.4** V1.1
Hyper-Threading Technology	Enables or disables the hyperthreading function of the processor. When enabled, one physical processor acts as two logical processors by “threading” two sets of data instructions in parallel streams of processing. The processor can then simultaneously manage incoming data from different applications without losing track of the data processing status of each. **Note:** When a processor does not support the Hyper-Threading feature, this parameter will be grayed out.	**Enabled** Disabled

Memory Settings

This parameter allows you to configure the memory sockets when a memory fault is detected by your system. Selecting this option displays the screen below.



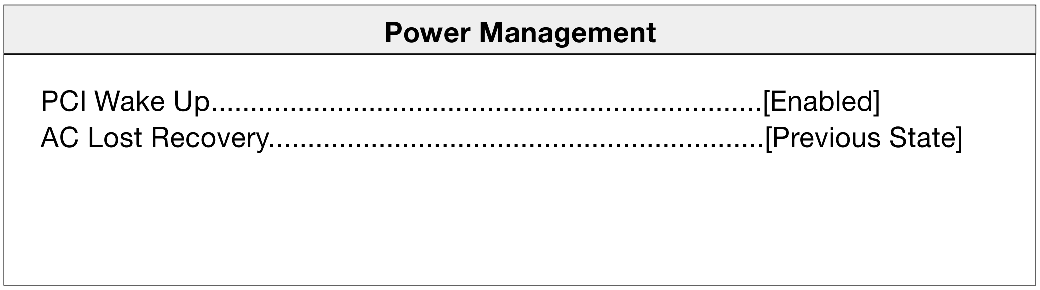
```
Memory Settings

DIMM1:Row 0..................................................................[Row is Enabled]
DIMM1:Row 2..................................................................[Row is Empty]
DIMM2:Row 1..................................................................[Row is Empty]
DIMM2:Row 3..................................................................[Row is Empty]
DIMM3:Row 4..................................................................[Row is Empty]
DIMM3:Row 6..................................................................[Row is Empty]
DIMM4:Row 5..................................................................[Row is Empty]
DIMM4:Row 7..................................................................[Row is Empty]
```

Parameter	Description	Option
DIMM x:Row x	When a memory fault is detected during POST, BIOS will disable the faulty DIMM slot on the mainboard and set its parameter to Disabled by user. You have to manually set the this parameter to Row is Enabled when a new memory card is installed on the DIMM slot. For more instructions on how to remove and install a memory module, see page 50.	**Row is Enabled** Disabled by user Row is empty

Power Management

The Power Management menu allows you to setup various power saving features, when the system is in standby or suspend mode.

The screen below appears when you select **Power Management** from the main menu:



Power Management

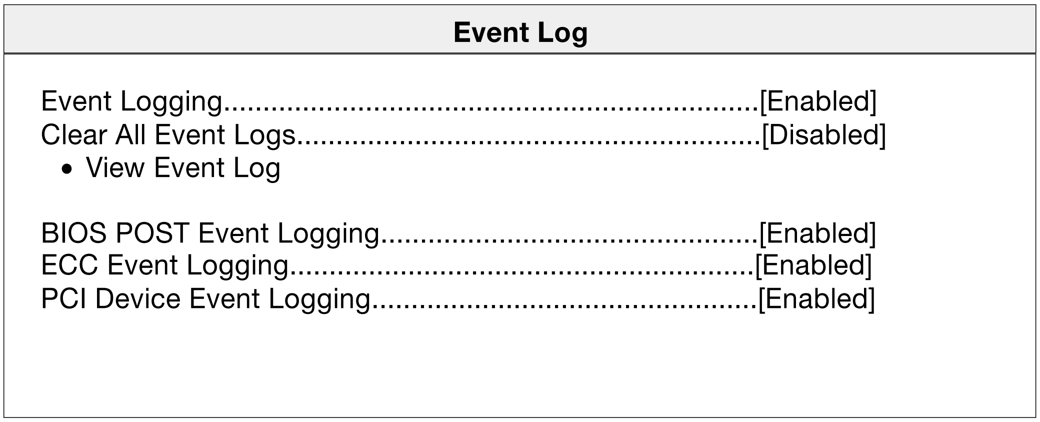
```
PCI Wake Up.........................................................[Enabled]
AC Lost Recovery................................................[Previous State]
```

Parameter	Description	Option
PCI Wake Up	When enabled, the onboard local area network device or add-on PCI card activity wakes up the system from suspend mode.	**Enabled** Disabled
AC Lost Recovery	Defines the power state to resume to after a system shutdown that is due to a power failure. When set to Previous State, the system will return to the active power state prior to shutdown. When set to Disabled, the system remains off after a power failure.	**Previous State** Disabled

Error Log

The Error Log lets you specify the appropriate settings for the system’s event handling function. The system event log enables you to record and monitor events that occur in the system.

The screen below appears when you select **Event Log** from the main menu:



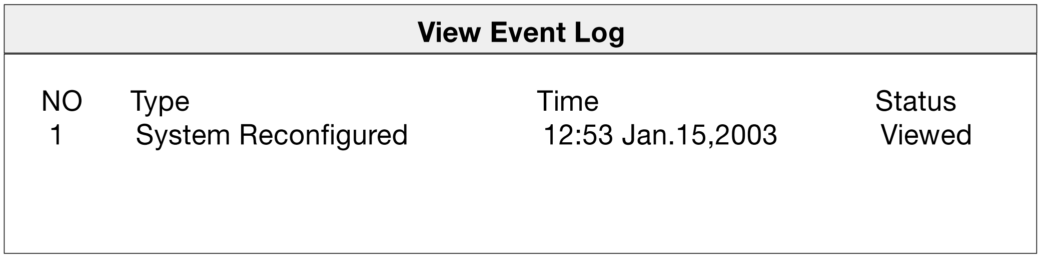
```
                              Event Log

Event Logging.......................................................[Enabled]
Clear All Event Logs................................................[Disabled]
  • View Event Log

BIOS POST Event Logging.............................................[Enabled]
ECC Event Logging...................................................[Enabled]
PCI Device Event Logging............................................[Enabled]
```

Parameter	Description	Option
Event Logging	Enables or disables the event logging function of the system.	**Enabled** Disabled
Clear All Event Logs	When this item is set to Enabled, the event log is cleared and this parameter is set to Disabled for the next system bootup.	**Disabled** Enabled
View Event Log	Press **Enter** to access the View Event Log submenu.	
BIOS POST Event Logging	BIOS checks the bad processors and memory modules during the POST process. When this parameter is enabled, it will make a log for POST error.	**Enabled** Disabled
ECC Event Logging	ECC (Error Correcting Code) tests the accuracy of data as it passes in and out of memory. When this parameter is enabled, single-bit and multi-bit memory errors will be recorded in the event log.	**Enabled** Disabled

Parameter	Description	Option
PCI Event Logging	When this parameter is enabled, any PCI device error will be recorded in the event log.	**Enabled** Disabled

View Event Log

The screen below appears when you select the **View Event Log** parameter from the Event Log screen:



View Event Log

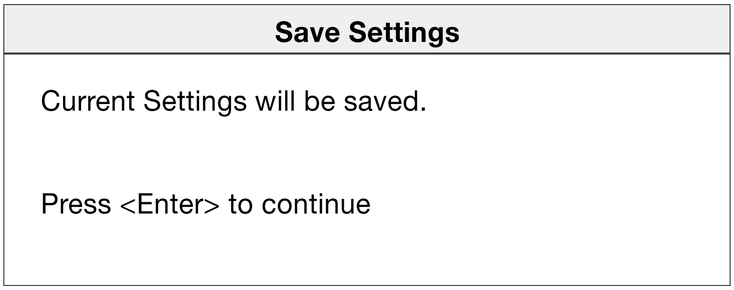
```
NO     Type                             Time                    Status
 1      System Reconfigured              12:53 Jan.15,2003       Viewed
```

The View Event Log screen displays the system log event file, such as number, type, time and status.

Save Settings

Use this option to save the changes made and close the BIOS setup.

The dialog box below appears when you select **Save Settings** from the main menu:



Save Settings

Current Settings will be saved.

Press <Enter> to continue

Press the **Enter** key.

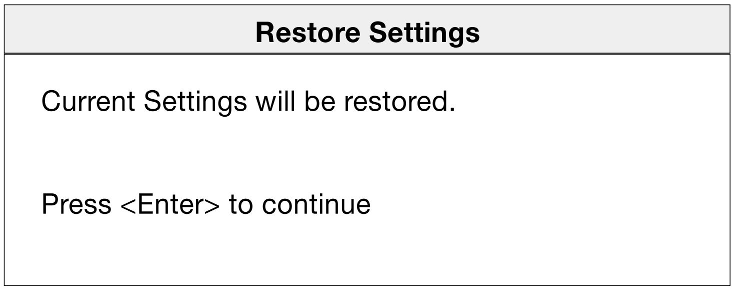
Select **Yes** to save settings before exiting the BIOS Setup utility.

Select **No** to ignore the message and return to the BIOS Setup utility main menu.

Restore Settings

Use this option to return to the previous configuration settings.

The dialog box below appears when you select **Restore Settings** from the main menu:



Current Settings will be restored.

Press <Enter> to continue

Press the **Enter** key.

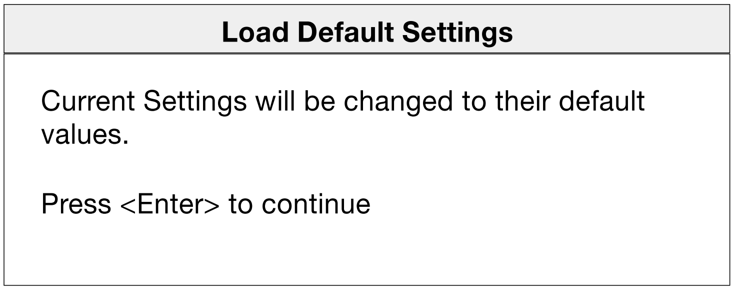
Select **Yes** to return to the previous configuration settings.

Select **No** to ignore the message and return to the BIOS Setup utility main menu.

Load Default Settings

Use this option to load the default settings for optimized system configuration. When you load the default settings, some of the parameters are grayed-out with their fixed settings. These grayed-out parameters are not user-configurable.

The dialog box below appears when you select **Load Default Settings** from the main menu:



Load Default Settings

Current Settings will be changed to their default values.

Press <Enter> to continue

Press the **Enter** key.

Select **Yes** to load the default settings.

Select **No** to ignore the message and return to the BIOS Setup utility main menu.

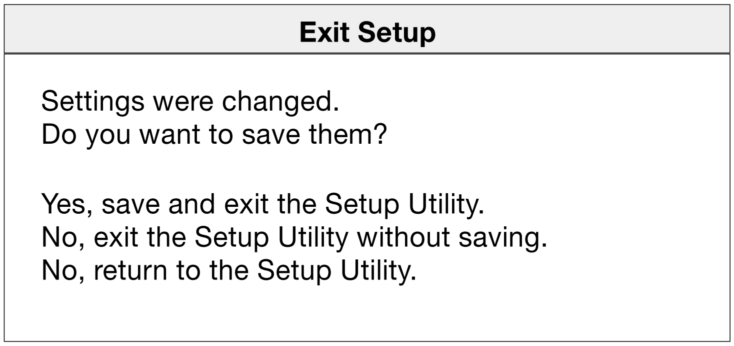
Exit Setup

Examine the system configuration values. When you are satisfied that all the values are correct, write them down. Store the recorded values in a safe place. In the future, if the battery loses power or the CMOS chip is damaged, you will know what values to enter when you rerun Setup.

Use the arrow keys to select your response.

Press the **Enter** key.

If you made any changes to the Setup utility, the dialog box below is displayed.



Exit Setup

Settings were changed.
Do you want to save them?

Yes, save and exit the Setup Utility.
No, exit the Setup Utility without saving.
No, return to the Setup Utility.

Use the arrow keys to select your response.

Select **Yes** to save the changes in CMOS.

Select **No** to retain the previous configuration values.

Press the **Enter** key to exit.

Appendix A: ASM quick installation guide

This appendix shows you how to install the ASM software package.

Installing ASM

Acer Server Manager (ASM) consists of the ASM Agent, ASM Management Server and ASM Console. These components are required to perform server management tasks.

System requirements

ASM requires TCP/IP connectivity between the ASM Agent, ASM Management Server and the ASM Console.

ASM Agent

- Altos Server System
- Minimum of 128 MB RAM
- SCSI/IDE hard drive with at least 100 MB free hard disk space
- Microsoft Windows NT 4.0 or Windows 2000 Server/Advanced Server operating system

ASM Management Server

- Altos Server System
- Minimum of 128 MB RAM
- SCSI/IDE hard drive with at least 100 MB free hard disk space
- Microsoft Windows NT 4.0 or Windows 2000 Server/Advanced Server operating system

ASM Console

- Intel Pentium III (500 MHz) or higher processor
- 128 MB of RAM
- SCSI/IDE hard drive with at least 100 MB free hard disk space
- Microsoft Windows 2000 Professional/XP/Server/Advanced Server operating system
- Ethernet card

System setup

Make sure that your system meets the requirements listed above before proceeding. You may also want to change your screen to 800 x 600 resolution or higher for optimum viewing.

Installing ASM Agent

To install ASM Agent:

1 Log in to the managed server using the Administrator account.

2 Insert the EasyBUILD™ Management CD into the server's CD-ROM drive.

The installation sequence will automatically be displayed.

3 Select the option for ASM installation.

The installation wizard will be initialized.

4 Follow the installation wizard until you are prompted to choose the proper components you want to install.

5 Select **ASM Agent** then click **Next**.

6 Follow all onscreen instructions to complete installation.

For detailed instructions on installing ASM Agent, refer to the ASM User's manual.

To launch the program, on the Windows taskbar click on the **Start** button, point to **Programs**, select **Acer Server Management Suite** then click **ASM Agent**.

Installing ASM Management Server

To install ASM Agent:

1 Log in to the managed server using the Administrator account.

2 Insert the EasyBUILD™ Management CD into the server's CD-ROM drive.

The installation sequence will automatically be displayed.

3 Select the option for ASM installation.

The installation wizard will be initialized.

4 Follow the installation wizard until you are prompted to choose the proper components you want to install.

5 Select **ASM Management Server** then click **Next**.

6 Follow all onscreen instructions to complete installation.

For detailed instructions on installing ASM Management Server, refer to the ASM User's manual.

To launch the program, on the Windows taskbar click on the **Start** button, point to **Programs**, select **Acer Server Management Suite** then click **ASM Management Server**.

Installing ASM Console

To install ASM Console:

1 Log in to the target Windows-based PC using the Administrator account.

2 Insert the EasyBUILD^{TM} Management CD into the system's CD-ROM drive.

The installation sequence will automatically be displayed.

3 Select the option for ASM installation.

The installation wizard will be initialized.

4 Follow the installation wizard until you are prompted to choose the proper components you want to install.

5 Select **ASM Console** then click **Next**.

6 Follow all onscreen instructions to complete installation.

For detailed instructions on installing ASM Console, refer to the ASM User's manual.

To launch the program, on the Windows taskbar click on the **Start** button, point to **Programs**, select **Acer Server Management Suite** then click **ASM Console**.

Appendix B: Altos R300 Rack installation guide

This appendix shows you how to install the Altos R300 on the optional rack mount kit.

System rack installation

Important! Observe the electrostatic discharge (ESD) precautions indicated on page 33 when perfoming the following procedures. Do not attempt the procedures described in the following sections unless you are a qualified technician.

Equipment rack precautions

Follow the rack manufacturer's safety and installation instructions for proper rack installation.

The following additional rack safety installation measures should be considered:

- Anchor the equipment rack

  The equipment rack must be anchored to an unmovable suitable support to prevent the rack from falling over when one or more systems are fully extended out of the rack assembly. You must also consider the weight of any other devices installed in the rack assembly. The equipment rack must be installed according to the manufacturer's instructions.

- Main AC power disconnect

  You are responsible for installing an AC power disconnect for the entire rack unit. This main disconnect must be readily accessible, and it must be labeled as controlling power to the entire unit, not just to the system(s).

- Earth ground the rack installation

  To avoid the potential for an electrical shock hazard, the rack assembly itself must be suitably earth grounded, according to your local regional electrical codes. This typically will require the rack to have its own separate earth ground. We recommend you consult your local approved electrician.

- Elevated Operating Ambient Temperature

  The maximum operating temperature of the system is 35 °C (95°F). Careful consideration should be given to installing the system in an environment compatible with the 35 °C (95°F) maximum ambient temperature.

- Reduced Airflow

  The amount of airflow required for the safe operation of the equipment should not be compromised when installing the system in a rack.

- Mechanical Loading

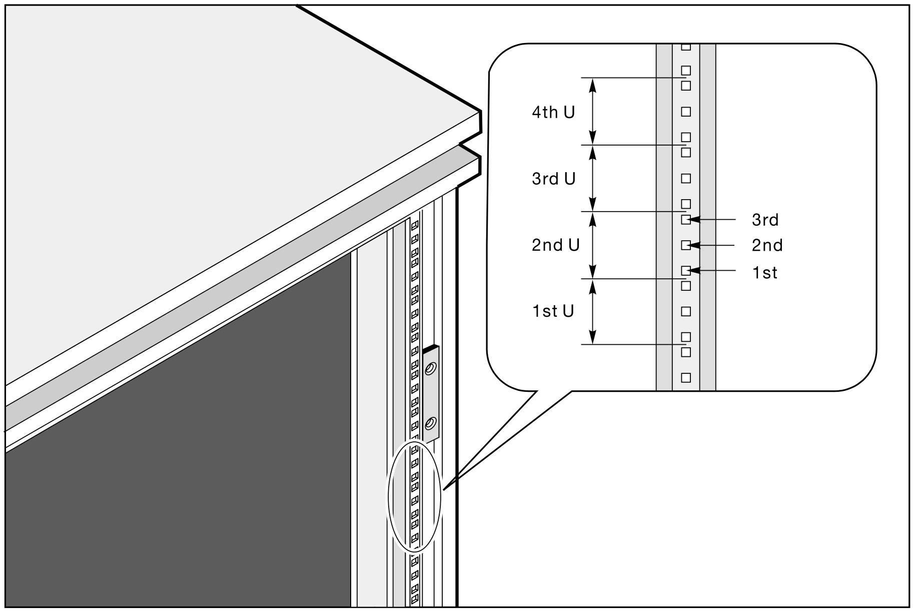
  Exercise care when mounting the system in a rack to avoid any accidents.

- Circuit Overloading

  Appropriate consideration should be given when connecting the supply circuit to the system to avoid any circuit overload. The system nameplate rating should be used when addressing concerns about circuit overload.

Vertical mounting hole pattern

The four vertical rails of the system rack contain mounting holes arranged in a manner shown in the figure below:



The system occupies 1U in the rack. Count the U positions and hole numbers from the bottom up.

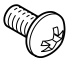
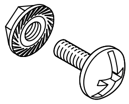
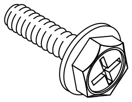
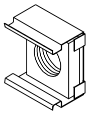
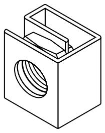
Note: The unit of measurement used in this document is "U" (1U = 1.75 inches or 44.45 mm). The total sum of the heights of all components in the rack measured in "U" cannot exceed the height of the rack.
For more information, refer to the documentation that came with your system rack.

The distance from the center of two holes with closer spacing to the center of the next pair is equivalent to 1U.

When installing components, you must start your measurement from the center of the two holes with closer spacing. Otherwise, the screw holes on the component may not match those on the rack.

Screw types used

The following screws are used in the assembly of the Altos R300 system and bundled rack-mountable components:

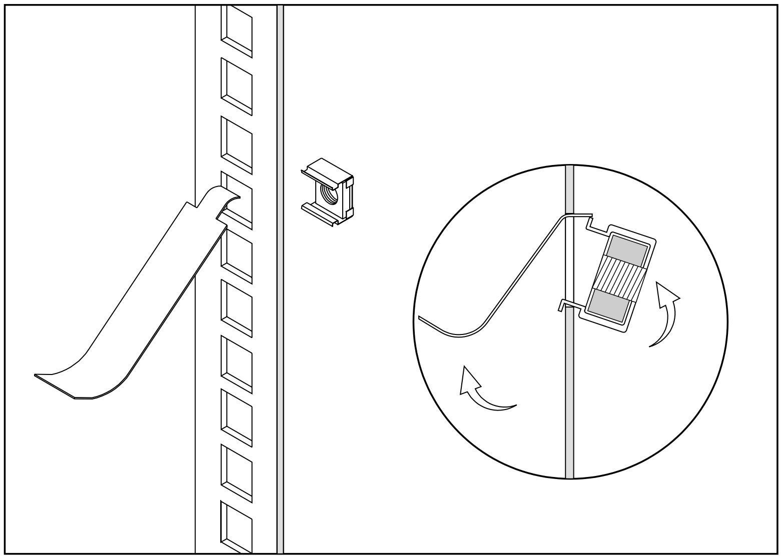
Screw type and part number	Figure	Usage
M4 x L5		• Securing the inner mounting rails to the system • Securing the cable carrier to the cable carrier bracket
M4 x L8 M4 nut		Securing the mounting brackets to the inner sliding piece
M6 x L10 12J5289		• Securing the cable carrier to the rack • Securing the component rail to the rack • Securing the system components to the rack
M6 Cage nut 12J5288		Supports the M6 metal screws for securing system components to the rack
M610 Cage nut 00N8709		Supports the M6 metal screws for securing system components to the rack

Installing cage nuts

Cage nuts are used to secure systems and other components to the vertical rails in the rack.

To install cage nuts:

1. Insert the lower lip of the cage nut over the bottom of the opening at the back of a rail.
2. Insert the small end of the cage-nut installation tool through the opening in front of the rail and hook the tool over the top lip of the M6 cage nut as shown below.



Note: If the rack's rail has a rounded screw hole you must use the M610 cage nut.

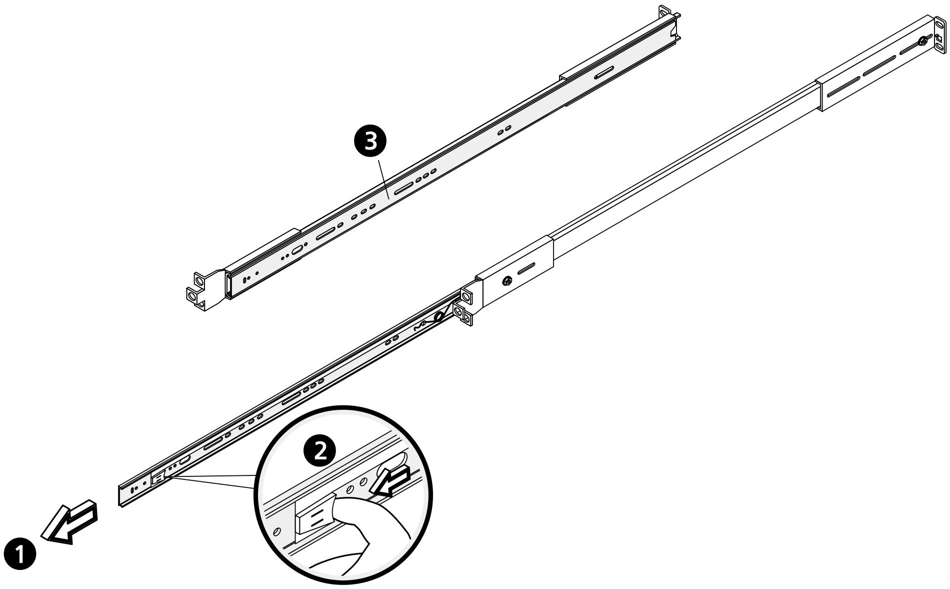
3. Push in the cage nut while rotating the tool up and pulling the tool back toward you until the top lip of the cage nut snaps into position.
4. Repeat this process to install the other cage nuts in their appropriate locations.

Installing the system into the rack

To install the system into a four-post rack

1 Extend the component rail from the mounting rail until the component rail release latch clicks (1). Depress the release latch and slip the component rail out of the mounting rail (2). Do the same thing to the other mounting rail (3).

Note: The mounting rails allow the system to slide in and out of the rackmount for maintenance purposes.
Each mounting rail consists of a fixed outer piece that is screwed onto the mounting bracket with a M4 x L8 metal screw and nut and an inner sliding piece controlled by a steel ball gearing movement.



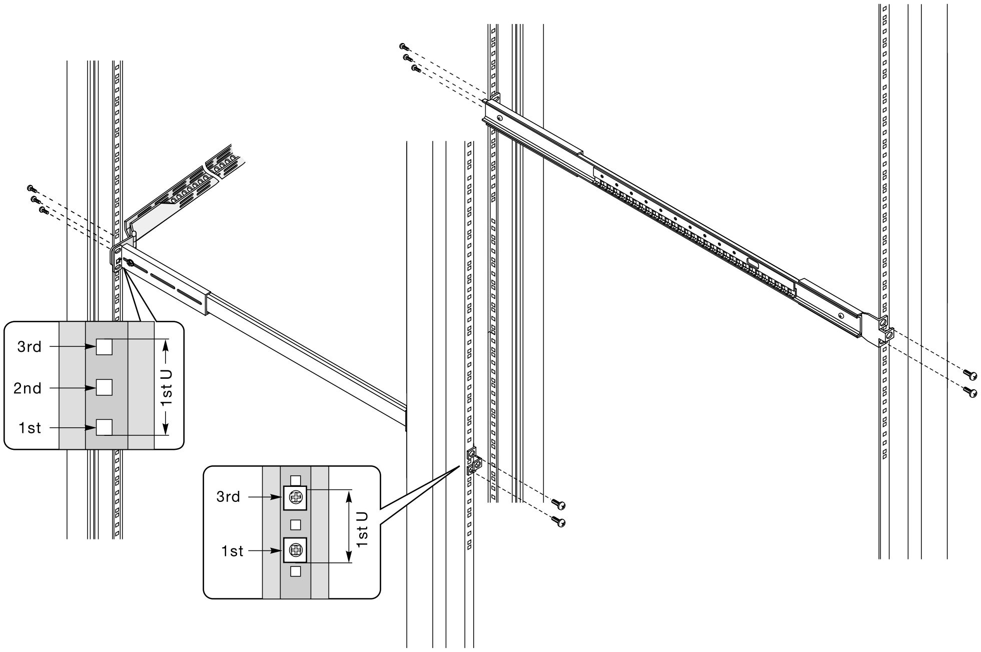
2 Put the component rails aside.

3 Install the mounting rails to the rack by the following steps:

a Install the left mounting rail with the cable carrier first to the rack using five M6 x L10 metal screws and cage nuts (see page 109 for instructions on how to install a cage nut). The cable carrier is installed overlapping the mounting.

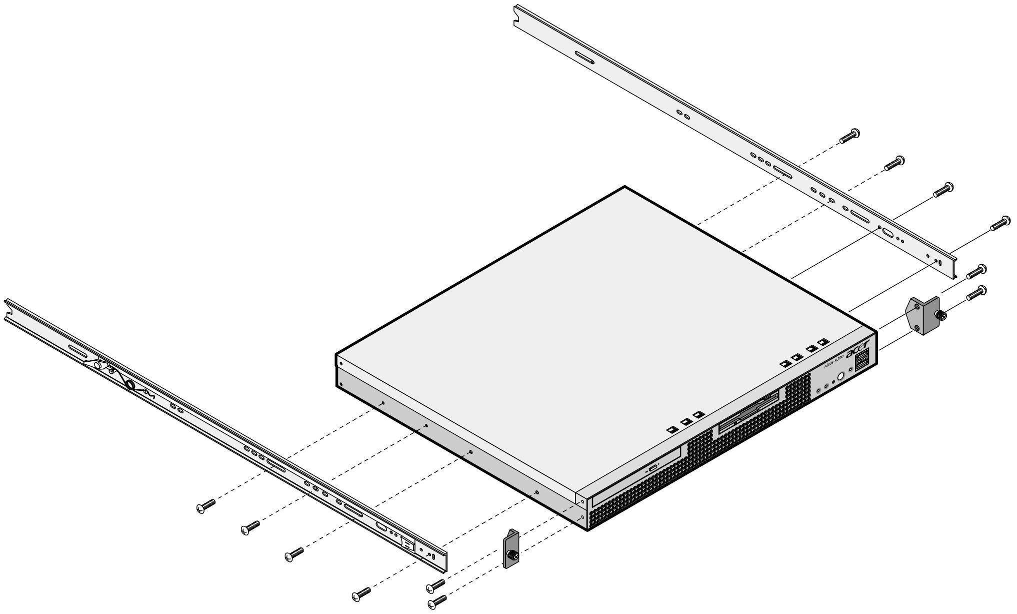
Note: The cable carrier allows you to tie-wrap all cables to and from the system. As you slide the system in and out of the rack, the cable carrier collapses and extends, keeping the cables untangled and attached to the system.

b Install right mounting rail using five M6 x L10 metal screws and cage nuts.



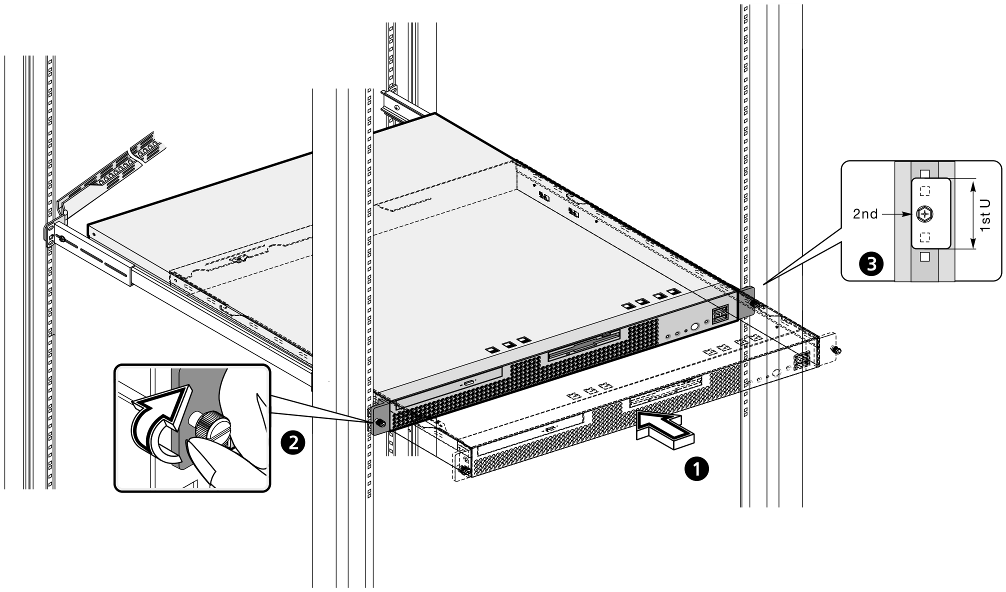
Note: The system occupies 1U in the rack. Count the U positions and hole numbers from the bottom up. Secure the mounting bracket on the 1st and the 2nd holes of the 1st U using four M6 x L10 screws. Make sure that both mounting rails are at the same level. Take note of the vertical rail hole pattern. See “Vertical mounting hole pattern” on page 107.

4 Attach the component rails and rack mount bracket to the system with sixteen M4 x L5 metal screws.

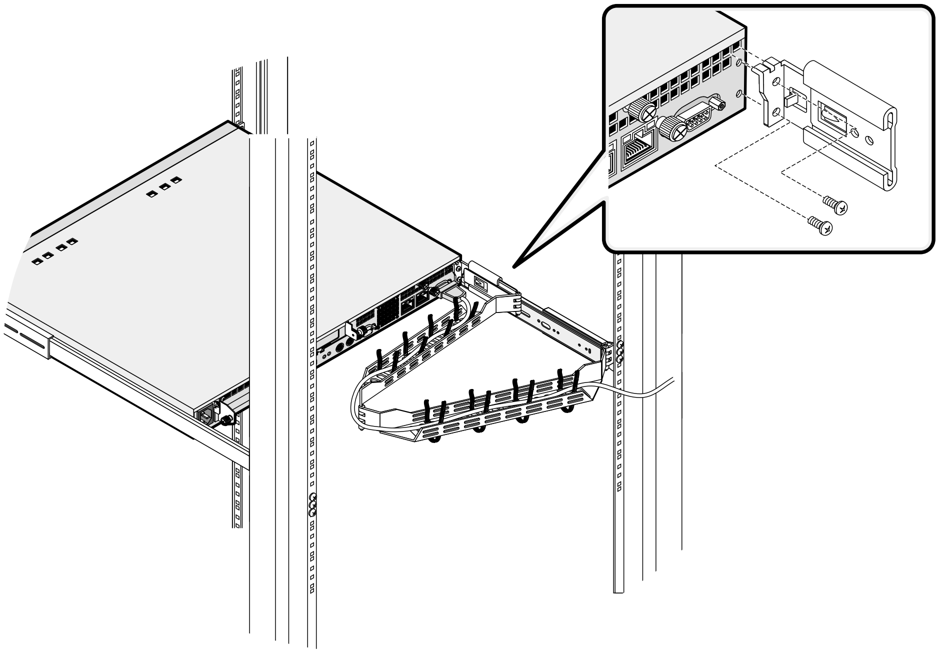


5 Install Altos R300 into the rack by carefully aligning the inner rails attached to the system with the mounting rails on the rack. Slide the system into the rack (1).

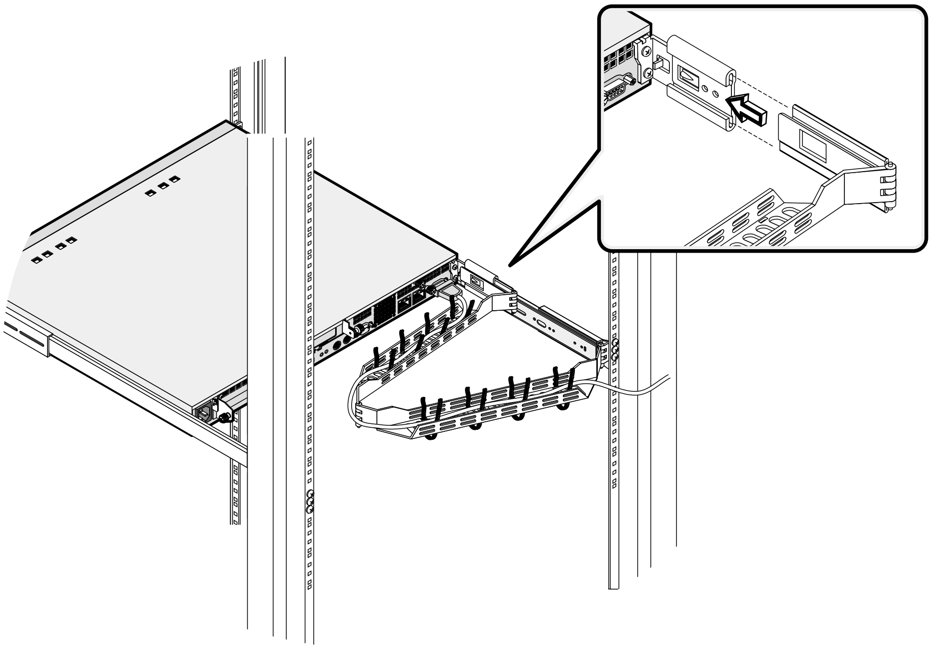
Secure the system to the rack with two thumbscrews (2,3).



6 Attach the cable carrier bracket to the rear of the system using two M4 x L5 metal screws.

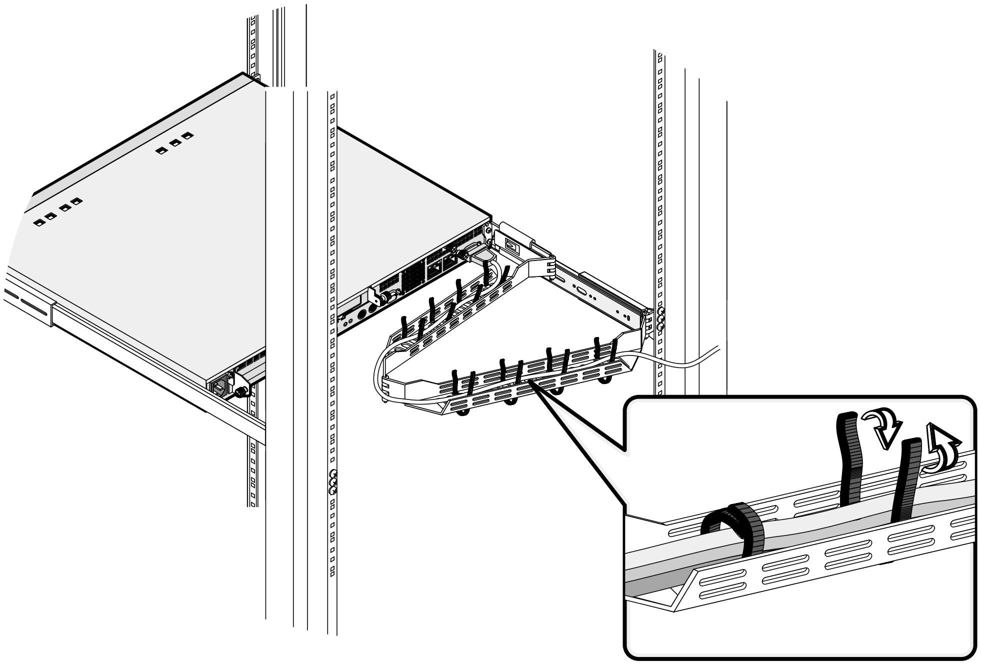


7 Align then slide the cable carrier to the cable carrier bracket until the release latch clicks.



8 Insert the power, peripheral and networking cables into the appropriate ports.
Refer to “Basic connections” on page 21 for detailed instructions.

9 Bundle all cables to the cable carrier using the cable straps.



To install the system into a two-post rack

Attach the metal rails to the system with four M4 x L5 metal screws (1).

Install Altos R300 into the rack with four M6 x L10 metal screws (2).